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ABSTRACT

This curriculum guide for grades K-6 is the first volume of a two-part series. It is meant to provide an ordered sequence of mathematical concepts from which teachers may organize an arithmetic program allowing for individual student progress with the greatest amount of individual attention. Each topic is arranged into levels based on the topic's content and not necessarily by grade level. Each level contains the following general categories: Concepts, Behavioral Objectives, References and Resources. The objectives are matched with textbooks referenced by pages and with specific resource materials to be used in the instruction. A list of activities that may be used for instruction is also provided at the end of each level. Topics covered include numeration, place value, addition, subtraction, multiplication, division and inequalities. Also provided is a list of 54 classroom games that are directly related to the topics included in this guide. For Volume II, see SE 017 305. (JP)

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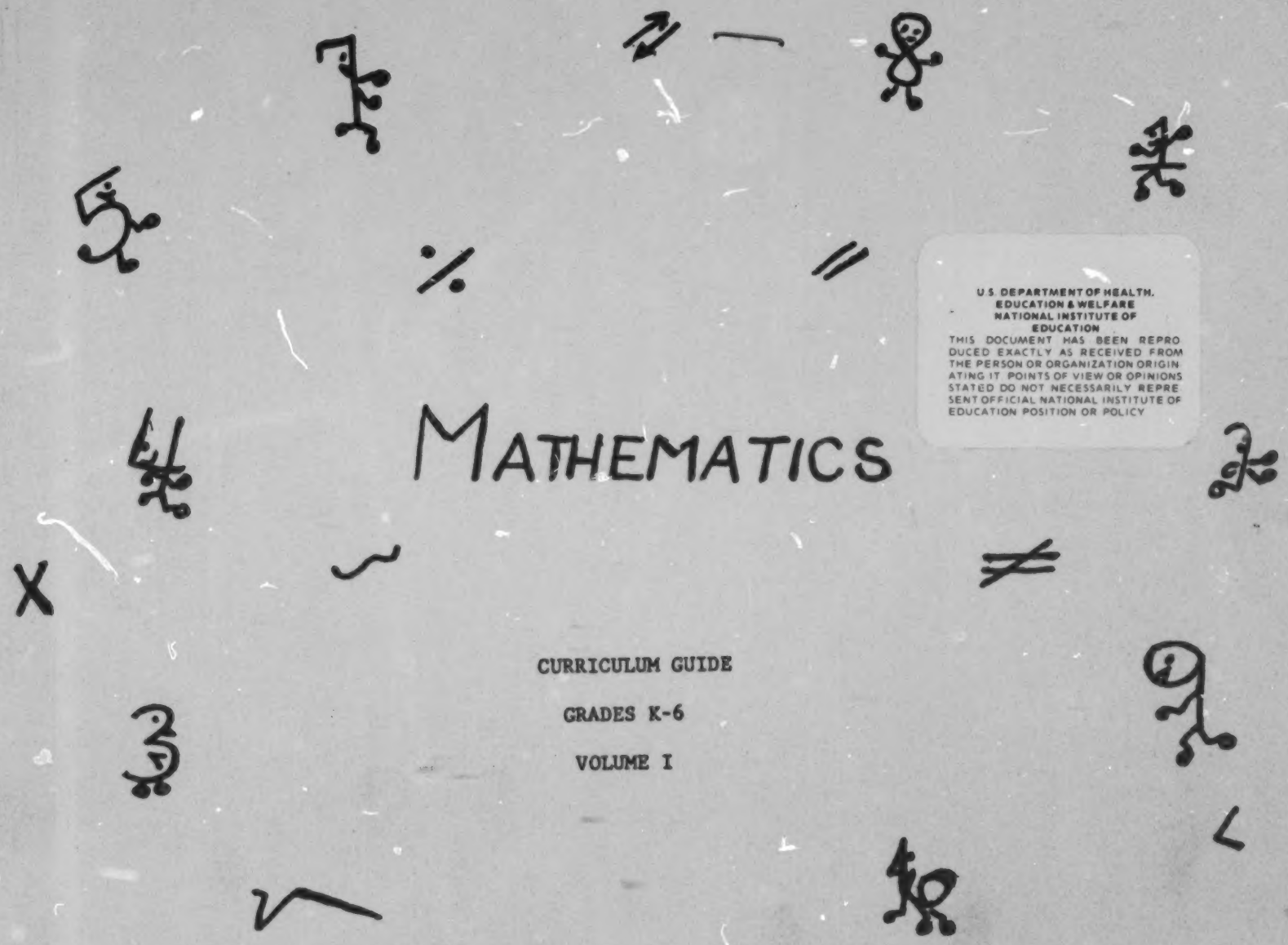

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MATHEMATICS

CURRICULUM GUIDE

GRADES K-6

VOLUME I

Los Alamos Schools
Los Alamos, New Mexico

SE 017 304

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FOREWARD

This continuum represents a revision of the guide that was constructed for the Los Alamos Schools during the summer of 1969. It is meant to provide a program in arithmetic that will permit the individual student to progress through an ordered sequence of mathematical concepts, and give the teacher as opportunity to allow for individual progress with the greatest amount of individual attention.

During the school year 1969-1970, the Los Alamos Schools' Mathematics Committee examined the guide and recommended modifications and additions, and these recommendations are reflected in this edition.

MATHEMATICS

GENERAL CONTENT GOALS:

The content of an improved mathematics program should:

1. Lead the student to understand the language and demonstrate the concepts, structures, and techniques of mathematics.

2. Have mathematical integrity which involves internal consistency, accuracy, and precise vocabulary.

3. Develop in the student a sensitivity to patterns in mathematics and be able to apply these patterns.

4. Develop an appreciation of the broad cultural aspects of mathematics and its contributions to the development of the modern world.

5. Plan for meeting the educational and vocational objectives of the individual student.

6. Help each student reach at least minimal competencies.

7. Be designed to meet the needs of a constantly changing technological society.

Credits:

AASA
ASCD
NASSP
NCTM
LAMC

APPROACH AND SUGGESTIONS FOR USING THIS GUIDE

BEFORE USING THIS CONTINUUM, PLEASE READ THE FOLLOWING:

1. This continuum contains 13 conceptual areas and is not meant to reflect tradtional grade levels.

2. Each level contains the following general catagories: Concepts, Behavioral Objectives, References and Resources. Under References and Resources, we have left columns for textbooks, audio-visual materials. and prepared units or packets. The item, audio-visual materials includes such items as filmstrips, transparencies, records, dittos, math kits, and other materials found in the particular buildings.

3. Each concept refers the teacher and student to several behavioral objectives. The behavioral objectives that are to be considered required are designated with an asterisk, *.

4. Although there is one textbook referred to more than any other book or reference in this continuum, teachers are requested not to consider this source as the only or best source for instruction. This text has been referred to in depth because we felt that many teachers, new or experienced, may need a basic source of reference. However, we hope that as this continuum is employed by teachers, they will expand their sources to many textbooks and include them in their recommendations for the committee that next revises this guide.

5. The first two columns under References and Resources are for various textbooks and their pages that apply to the behavioral objectives. Over the first of these two columns is found the capital letters HM. This stands for the textbook, Houghton-Mifflin. The second column is reserved for other testbooks that have sections that apply to the behavioral objectives. Other textbooks are abbreviated in this column, i.e., HBW stands for Harcourt, Brace and World, HRW stands for Holt, Rinehart, and Winston.

GAMES

1. Silent Action
Give each child a card with one of the numerals from 1 to 10 written on it. Have each child, in turn, place his card on the chalkledge in the proper sequence.

2. Fix the Mix-Up
Have pupil arrange cards with numerals from 1 to 10 written on them to show the proper sequence.

3. Detective
Place pictures of sets of from one to ten objects on the chalkledge. Then flash a numeral card and have two children compete to see who will be the first one to find the set illustrating the given number.

4. Performer Game
Write a numeral on the chalkboard or flash a numeral card. Call on a child to perform an action he chooses the number of times indicated by the numeral.

5. Arithmetic Neighbors
Distribute numeral flashcards representing the whole numbers from 1 through 10. Call on a child to come to the front of the room, tell his number, and ask who his neighbors are.

6. Quick and Quiet
Give each child a set of flashcards of the numerals from 1 to 10. Hold up a picture of a set of objects and have the children respond in unison by counting the number of objects in the set and holding up the numeral card for the correct number of objects.

7. Flying to the Moon
The teacher has placed Earth and Moon on a flannel board. A number of rockets are used which can be manipulated by the children. How many are flying to the moon? How many are flying from the moon?

8. "Postman"
Draw apartment house and number each door. The number on the door tells the children how many letters to deliver.

9. Number Books
Staple together sheets of paper to make one booklet for each member of your class. Have children draw and color objects to correspond with numbers.

10. Hanging up the Wash
Set up a clothes line and have children hang up numbers in proper sequence.

11. Picture Cards
Cut twenty tagboard picture cards. Use these cards to make ten matching sets of picture quantities. Have children match sets--include empty set.

12. Number Round Up
Make a large tagboard disc with movable hand attached to its center. Write the numerals from 1 through 10 out of sequence around the circumference of the circle. Have a pupil spin the hand, read the numeral to which it points and tell which numbers come before and after the designated number in natural order.

13. Telephone
Dial a play telephone and say "I'm dialing three plus one." The child called upon answers, "Well, your number is four." If the child answers incorrectly say, "Sorry, wrong number," and dial again.

14. Head and Tails
Place pictures of sets of objects on the chalkledge. Send a boy to the first picture and a girl to the last picture; both should be ready to write on the board. At a given signal, the children write as quickly as possible the numeral for the cardinal number of each set. Variation: Use addition and subtraction cards and have the competitors write the answers on the board above each card.

15. Thinker's Fun
Distribute cards with a numeral for a number greater than 10. Then appoint 3 children to be the symbols $<$, $>$, and $=$. Every child should have a card. Call on 2 children to go to the front of the room, hold up their cards and tell the number of tens and ones in their numbers. Then have the class choose the card holder with the correct symbol of relation to stand between the 2 numerals and read the number statement; for example, "25 is greater than 13." In a case such as this, the 2 children holding numeral cards may be asked to change places and the child holding the sign may be replaced by the one having the "less than" sign.

16. Seven Up
Have all the children put their heads down on their desks. Arrange sets of from 1 to 10 objects on a table at the front of the room. Distribute to 7 children flashcards each containing a numeral from 1 to 10. Call out, "Seven up!" Those children holding the cards stand, go to the front of the room, say their numbers, and place their cards on the corresponding sets of objects. The first child to return to his seat after correctly matching his card with a set of objects is the winner and assumes the duties of the teacher. He reaaranges the sets and distributes the cards to 7 other children. When a new winner is established, the first winner rejoins the class and puts his head down.

17. Knock Out
For practice in the sequence of larger numbers, write at least 4 numerals representing a number sequence on the chalkboard. Let 1 of the numerals be incorrectly placed. Have a pupil "knock out" the wrong number by placing an X on it.

18. Information Please
Arrange the class in teams. Call out a number from 10 to 99. Have a member of each team tell something about the given number. For example, I contestant might tell what number comes before (or after) the given number; how many tens and ones are in the given number; or the sum of 3 and the given number. If a contestant gives an incorrect answer, he sits down and a member of the next team is asked the same question. The game continues in this manner until the only children left standing are all members of the same team.

19. What's My Numeral?
Pin a numeral on the back of a child without his knowing what numeral it is. Let him ask questions about the number, to which the class can answer yes or no. Then give him 3 guesses.

20. Change Places
Tell a child to move to the third desk in the second row. This child tells the pupil occupying that place to move to another desk such as the fifth desk in the last row. The game continues in this manner until every child has had an opportunity to participate. Each time a child gives directions he should do so in a loud clear voice so that the class may check to see that the directions are being correctly carried out.

21. Counting Higher
Write some numerals for upper decade numbers on the chalkboard. Assign a row or team to each numeral. At a given signal the first child on each team runs up and writes the numeral for the next number in sequence. He then returns and hands the chalk to the next person on his team, and so on. The first team to finish with a perfect score is the winner. Variation: This activity may be used to provide practice on descending number sequences as well as ascending sequences.

22. Expando
Make a card for each of the numerals for 1 to 99 and place all the cards in a container. Call on 1 child at a time to select a numeral card and to write its expanded form on the chalkboard. For example, he would write 50 + 8 for the numeral 58.

23. Speed
Flash cards containing numerals in the expanded form to 2 pupils at a time. Have them race to find another name for the expanded numeral on the number line or the one-hundred chart.

24. Missing Number
Place 3 flashcards with numerals on them in a pocket chart in horizontal form. Turn 1 card to the reverse side. Tell the sum of the 3 numbers. Then call on a child to tell the missing number and turn the card around to verify his answer.

25. Relay Game
Have 2 teams compete to find the vertical notation card which corresponds to each addition or subtraction equation on cards being flashed by a leader. Keep score to heighten interest.

26. Jet Flight
Choose a child to be the pilot and assign him a number. Distribute cards containing the basic addition and subtraction combinations with missing sums and differences to several other children. Then have the pilot go to each card holder and say, "I fly Jet (8). Will you fly with me?" Each child holding a combination of 8 should say, "Yes, I will fly with you," and he should state his combination of 8, tell the answer and get in line behind the pilot. Those children holding cards with combinations of other numbers should say, "No, I will not fly with you, " and state their combinations. The game should continue until all children with combinations of 8 are in line behind the pilot.

27. What Numeral Am I?
Write some open sentences such as the following on the chalkboard: 10 - □ = □ , 20 - □ = □, 30 - □ = □, 50 - □ = □ . Call on a child to fill in the first place holder with any one of the numerals from 1 to 9 and to ask another child, "What numeral am I?" Have the second child fill in the second placeholder and read the equation.

28. Secret Equations
Think of an addition or subtraction combination. Tell the children the sum or difference and have them cite all of the combinations involving the sum or difference until they discover the secret equation.

29. Blast Off
Draw a sketch of a rocket on the board and write the numerals 54321 next to it. Each child who is able to give a combination of each of these numbers without hesitating may pretend to "blast off" his rocket.

30. All Aboard
Announce that the train is leaving on track 7. Then say "Anyone who knows a way of making 7 may board the train." Let all children who give correct combinations of 7 climb aboard the imaginary train at the front of the room.

31. Quiet Answer
Give each child a set of cards containing one card for each of the numerals from 1 through 10. Read or dictate a "story problem" to the class and have the children answer by holding up the card with the correct answer.

32. Speedy Pointer
Write the numerals 1 through 10 on the chalkboard. Divide the class into 2 teams and give the first member of each team a pointer. Flash a card of an equation with a missing addend and have the children point to the numeral on the chalkboard which completes the equation.

33. Just The Same
Give every child a numeral card for each of the numbers 1 through 10. Then make such statements as, "I am thinking of a number that means the same as 4 + 1." Have the children tell the number by holding up the correct card, in this case the 5 card.

34. Partners
A pupil names a factor and asks someone else to help him make a given product. For example: "I am 2. Who will help me make 8?"

35. Relatives
Write one combination on the board. Call upon children to write the related combinations. The children who write the combinations correctly are "relatives."

36. More Relatives
Send a small group of children to the board. Each child writes a combination and returns to his place. Another group of children steps up and each child writes the related combinations and one new combination. Each child in a third group complete the related combinations and writes a new combination. The game continues in this manner.

37. Arithmetic Puzzle Box
Each child draws a flashcard from a large box. He shows his card, says the combination, and calls upon someone else to tell all the related combinations.

38. Products
A child draws a numeral card for a product number (24). He gives all possible multiplication combinations for the number.

39. Matching Game
Expose a number of combinations in card holder. Be sure to have more than those actually needed for the drill. Give each child an answer card for one of the combinations. The child inserts his answer under the correct combination.

40. Seat of Honor
Choose a front seat and call it the Seat of Honor. Dictate an example or a word problem. Individuals work silently. The child who finishes first rises. As soon as a majority of the class have finished, call upon the first child to give the answer. If his response is correct, he takes the Seat of Honor. If, however, he should have the answer incorrect, the next child is called upon, and so on, until the child with the correct answer is reached.

41. Climbing the Stairs
Draw a set of "stairs" on the chalkboard and write an open sentence (equation with a placeholder) on each step. Have the children, in turn, solve each equation, beginning at the bottom step. If a child makes a mistake at any given step, he "falls down the stairs" and must start over.

42. I Am Thinking
Make statements such as the following: "I am thinking of 2 numbers whose product is 42." "I am thinking of a number which, divided by 9, gives a quotient of 8." The children identify the numbers.

43. Riddles
Make up a riddle involving multiplication or division. For example, "I am 6 times as much as 4. What am I?" Call on a child to solve the riddle; then let the child make up a riddle of his own and call on another child to solve it.

44. Baseball
The "batter" must answer all the related combinations of a given combination before he is allowed to claim a run. Scores for Boys and Girls may be recorded on the board.

45. Telephone
The one calling may say, "I am calling Main 56." The child designated to "answer the telephone" responds by saying something similar to "Mr. 56's residence. 7 times 8 speaking."

46. Mailman
Each child is given a house number. The mailman has 2 letters for each one. He says, for example, "I have mail for 8 times 4." The child whose house number is 32 claims the mail.

47. Mental Race
Dictate: "(5 - 4) X (2 + 6) = 2 times what number?" 2 children compete to mentally find the answer; the winner races another child to find another answer.

48. Group Race
Groups are given slips of paper on which are written examples similar to the one above. There is one exercise for each member of the group. A child finishes his, passes the paper to the next member of the group to solve the second example, and so on. The group which is finished first with the greatest number of correct answers wins.

49. Double Operation
Place the column of numerals 0 through 9 on the chalkboard several times in random order. Assign a child to each column. At a given signal direct the contestants to, for example, "Multiply each number by 0 and then subtract 2." The first child to complete his column correctly is the winner.

50. Race Into Space
Draw pictures of 2 large rockets on the chalkboard and a picture of the moon above them. Write several statements of relation on each rocket; each statement should contain a numeral, a circular placeholder, and another numeral. Choose 2 teams; there should be one relation for each member of each team. At a signal, the first child on each team runs up to the board and writes the correct symbol of relation in the bottom statement on his rocket. He then returns and hands the chalk to the next child on his team, who runs up and fills in the placeholder in the second expression from the bottom; they relay continues until one team reaches the top of its rocket. The team that first reaches the top launches its rocket and lands on the moon. Variation: Use basic multiplication and division combinations or number sequence.

51. Name the Operation
Place several "numeral cards" in a box. Have each of the more able children select a card at random. If a child selects the card with the numeral 45, he might say, for example, "I am thinking of the number 9 and 5. What operation should I use to get 45?" or "I am thinking of the numbers 50 and 5. What operation should I use to get 45?" The child who answers should verbalize the operation as follows: "Use the operation of multiplication. 9 times 5 equals 45." Or he may say, "Use the operation of subtraction 50 minus 5 equals 45."

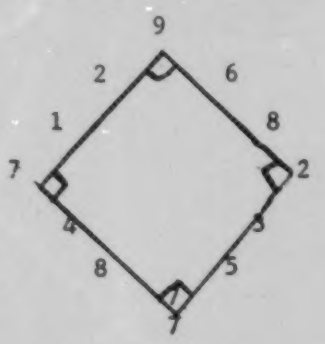
52. Oral Chain
Dictate numbers and indicate whether they should be added, subtracted, multiplied, or divided. The pupils solve each step as it is given. Keep a written record of the numbers dictated. Check back for errors immediately. For example, say, "3 times 2; minus 4; plus 8; divided by 2; times 5." The children should reply, "6; 2; 10; 5; 25." Other sequences may be:
3 + 60; - 13; X 5 (answer 250)
4 + 4; X 5; - 12; - 8; X 5; + 200 (answer 300)

53. Person with Best Eye

Place different objects around room. Have students estimate distance between objects, size, and weight of objects. Person getting the greatest number of answers right or nearly right wins.

54. Softball Game

Make a home run by correctly multiplying 7 on the home plate by each number on the diamond. Think 5 sevens, 3 sevens, 2 sevens, etc. Change the number on the home plate for needed practice.



MATH VOCABULARY

NUMERATION

LEVEL A

ABACUS
ABOVE
AFTER
ALL
BETWEEN
BIG
BOTTOM
CARDINAL
CHECK
CONTAIN
COUNTERS
COUNTING
DIFFERENT
EACH
EMPTY
EQUAL
EQUIVALENT
ESTIMATE
FEWER
FEWEST
FIND
FIRST...FIFTH
GROUP
LARGE
LARGEST
LAST
LESS THAN
LITTLE
MANY

LEVEL A (cont.)

MEMBERS
MIDDLE
MORE THAN
MOST
NONE
NUMERALS
NUMBERS
OBJECTS
OVER
PATTERN ORDER
RIGHT; LEFT
SAME
SET
SMALL
SMALLER
SMALLEST
SOME
TOP
ZERO

LEVEL B

ANSWER
BEFORE
BRACKETS
COLUMN
COMPARE
DESCRIBE

LEVEL B (cont.)

DIGIT
EQUAL SIGN =
EVEN
EVENTS
FIFTH...TENTH
FINISH
FOLLOWING
GREATER
GREATER THAN SIGN >
GREATEST
HUNDRED
IN FRONT OF
LESS
LESS THAN SIGN <
NUMBER LINE
ODD
ORDER
SYMBOL
WHOLE

LEVEL C

BACKWARD
FORWARD
ORDINAL
PATTERN
PLACE VALUE
PRECEDE

LEVEL C (cont.)

SEQUENCE
SET ELEMENTS
SKIP COUNT
SUBSET
UNION
WHOLE NUMBERS
(COUNTING NUMBERS)

LEVEL D

BRACE
DECIMAL
EXPANDED NOTATION
MULTIPLIES
ORDERED PAIRS OF WHOLE NUMBERS
ROUNDS OFF
STARTING POINT

LEVEL E

COMPOSITE
CONVERTS
PRIME

LEVEL F

COMPOSITE NUMBERS
FINITE
INFINITE
INTEGERS
PERCENT NOTATION
PRIME NUMBERS
RATIONAL NUMBERS

LEVEL G

SCIENTIFIC NOTATION

MATH VOCABULARY

PLACE VALUE

LEVEL A

none

LEVEL B

CARDINAL NUMBER
DIGITS
ELEMENT
GREATER THAN
LESS THAN
ONE'S PLACE
PLACE VALUE
SET
TEN'S PLACE
WHOLE NUMBERS

LEVEL C

BORROWING
CARRYING
COLUMN
ELEMENT
EXPANDED NUMBERS (NOTATION)
HUNDRED'S PLACE
ONE'S PLACE
ORDER
PAIR

LEVEL C (cont.)

PLACE VALUE
REGROUPING
STRUCTURED DECIMAL (GROUP)
TEN'S PLACE

LEVEL D

AFTER
BEFORE
BETWEEN
COMMA
DECIMALS
DECIMAL POINT
FRACTION
>, <
HUNDREDTHS
MULTIPLIES
REGROUP
RENAME
STRUCTURED DECIMAL GROUP
TENTHS
THOUSANDS

LEVEL E

FACTORS
>, <
MILLIONS
MIXED DECIMALS
NEGATIVE
ONE-THOUSANDTH
PLACE VALUE
POSITIVE

LEVEL F

BASE
EXPONENT
MILLIONTHS
NON-ZERO DIGIT
POWER

LEVEL G

BASE
NEGATIVE EXPONENTS
NUMBER SYSTEMS
POSITIVE EXPONENTS

MATH VOCABULARY

ADDITION
SUBTRACTION

LEVEL A

ADD
COMPARE
DIFFERENCE
EQUALS
GROUP
LEAVES
LEFT
NOT EQUAL
RIGHT
SAME AS
SET
SUBTRACT
SUMS

LEVEL B

ADD
ADDENDS
CREATE
DIFFERENCES
FAMILIES
MATCHING
MINUS
MISSING SUMS
NUMBER SENTENCE
NUMBER STORIES
PLUS
REGROUP

LEVEL B (cont.)

SIGN
SUBTRACT
SUM
SYMBOL
(+, -, =, ≠, >, <)

LEVEL C

ADDENDS
ASSOCIATIVE
BORROWING
CARRYING
COLUMN
COMMUTATIVE
DIGIT
EQUATION
HORIZONTAL
IDENTITY ELEMENT
LABELING
MULTIPLE STEP
PARENTHESES
PLACE VALUE
(EXPANDED
NOTATION)
RELATIONSHIP
REVERSE
SOLVE
STATEMENT

LEVEL D

ADDENDS
ASSOCIATIVE
CARRYING
COLUMN
COMMUTATIVE
DIGIT
HUNDRED'S PLACE
INVERSE RELATIONSHIP
LABELS
ONE'S PLACE
PART
PLACE
TEN'S PLACE

LEVEL E

ASSOCIATIVE
CARRYING
COLUMNS
COMMUTATIVE
DECIMALS
DIGITS
HUNDREDTHS
MIXED NUMBERS
MULTIPLE STEP
PRINCIPLE
WHOLE NUMBERS
WORD PROBLEMS

LEVEL F

DECIMAL
MILLIONTHS
WHOLE NUMBERS

LEVEL G

BASE
EXPONENTIAL FORM
NEGATIVE
POSITIVE
POSITIVE POWER
THERMOMETER

MATH VOCABULARY

MULTIPLICATION
DIVISION

LEVEL A

none

LEVEL B

none

LEVEL C

none

LEVEL D

ASSOCIATIVE
COMMUTATIVE PRINCIPLE
DIVIDEND
DIVIDE
DIVISOR
FACTORS
INVERSE RELATIONSHIP
MULTIPLES
OPERATIONAL SYMBOLS (X, ÷)
PRODUCT
QUOTIENT
REMAINDER
SET
SIMPLIFIED ADDITION

LEVEL D (cont.)

SUB-SET
TIMES
"UNDOES"

LEVEL E

ALGORITHM
ASSOCIATIVE
BASE
COMMUTATIVE
DISTRIBUTIVE
DIVIDEND
DIVISOR
ESTIMATE
EXPONENT
EXPONENTIAL FORM
FACTORS
INVERSE
"LADDER" DIVISION
PARTIAL QUOTIENT
PRODUCTS
QUOTIENT
REMAINDER
REPEATED ADDITION
SQUARES OF NUMBERS

LEVEL F

ALGORITHM
ASSOCIATIVE
COMMUTATIVE
DISTRIBUTIVE
DIVIDEND
DIVISOR
FRACTIONAL NOTATION
FACTOR
INVERSE
INVERT
PARTIAL QUOTIENT
QUOTIENT
PRODUCT

LEVEL G

ESTIMATION
EXPONENTIAL FORMS
FRACTIONAL PART
HUNDREDTHS
POSITIVE POWERS
REDUCES
THOUSANDS

MATH VOCABULARY

COMBINATION OF PROCESSES

LEVEL A

none

LEVEL B

none

LEVEL C

DIFFERENCES
=, ≠
>, <
HORIZONTAL
SUMS
VERTICAL

LEVEL D

DIFFERENCES
=, ≠
>, <
EQUATION
HORIZONTAL
VARIABLE
VERTICAL
SUMS

LEVEL E

AVERAGE
CARRYING
DISTANCE
=, ≠
>, <
RATE
TIME
VARIABLE

LEVEL F

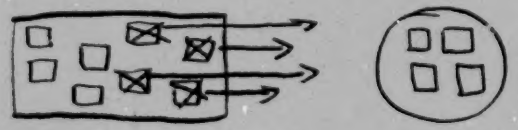
LATTICE
NEGATIVE
POSITIVE

LEVEL G

PERCENT
ROUNDS OFF

LEVEL A

NUMERATION

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES: IM BK K	OTHER	AV	Prepared Materials
Students should be able to:				
1. Count from 1 to 10. A. Factual Counting. B. Visual Counting. C. Auditory Counting.	1. 54-96		1. F.S. 758--Using and Understanding Numbers 1-5 759--Using and Understanding Numbers 5-9 760--Using and Understanding Numbers 9-12 902--What Numbers Mean	
2. Show that two sets are or are not equivalent. $\{\circ, \triangle\} \neq \{1, 2, 3\}$	2. 43-44			
3. Tell which set has more members and which set has fewer members. $\{\circ, \triangle, \square, +\}$ Fewer members $\{1, +, \triangle, \circ, \circ, \triangle\}$ More members	3. 36-38, 40-44, 46-47, 50, 51, 53, 56, 59, 82			
4. Select or construct a set of objects that contains as many objects as a given number. Take 4 squares from the box and put them in the circle. 	4. 45-59, 69-79			

LEVEL A

ORIENTATION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES: HM WK K	OTHER	AV	Prepared Materials
Students should be able to:				
5. Identify same, different; top, bottom; smaller, larger; smallest, largest; longest, tallest.	5. 1, 2, 3, 4, 8, 32			

a. Circle those objects which are the same as the first object.

△: ○, △, +, △, □, ◇, △

⊕: □, +, ◇, ⊕, ⊕, ○, ⊕, ⊠, ⊕

b. Cross out those numbers that are different from the first one:

3: 3, 3, 3, 3, 3, 3, 3

19: 19, 19, 19, 19, 19, 19, 19

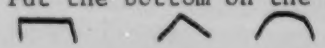
c. Put the top on the following objects.

Milk bottle

Tree

Telephone

d. Put the bottom on the following figures.



e. Circle the smaller and underline the larger.

□□, ○○, 47, 36

f. Circle the smallest and underline the largest.

□ □ □ □, ○○○○

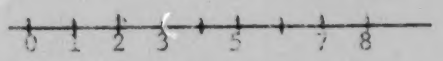
LEVEL A

NUMERATION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES: PM BK K	OTHER	AV	Prepared Materials
Students should be able to:				
6. Identify the empty set or the set with zero numbers. Underline the empty set or the set with zero numbers. {1,2,3}, {2,4}, { }, {□,□,□}, {0}	6. 45, 55, 56, 57, 59			
7. Read numerals from left to right in an orderly fashion.	7. 60-68, 80-81, 83			
8. Identify the cardinal numbers of structured groups to 10. a. {□,□,□,□} 4 b. {△,△,△,△,△,△,△,△,△} 9	8. Book I 11-14, 19-21, 23, 32-33, 35-37			
9. Write numbers 1 to 10 from left to right on an ordered set of pictures.	9. 81			
10. Write the numbers from 1 to 10 (order of numbers).	10. 65, 66, 80, 81			

LEVEL A

NUMERATION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES: TM BK	OTHER	AV	Prepared Materials
Students should be able to:				
*11. Insert missing numeral on a number line. 	11. 60-66, 80-81			

LEVEL A

NUMERATION

SUGGESTED ACTIVITIES

A. Counting rhythm instruments, chairs, children, materials for distribution.

B. Matching written numbers 1 to 10 with the same number of objects.

C. Buying and selling in a play store.

D. Following directions for games hopping "once", "twice".

E. Counting rhymes.

F. Picture cards may be used showing the numbers; then cards with dots. These should be related to the number symbols.

G. Supplying missing numbers 1--3.

H. Drawing objects to correspond with a given number.

I. Place sets of objects on flannel board; arrange sets of objects on a table.

J. Show items that come in a set.

K. Make set of cards for 1 to 10.

L. Have pupil draw a large ring around the members of each set to distinguish one set from another.

M. Flash 9 by 12 inch picture cards with two different sized pictures of animals, fruit, geometric shapes. Have pupil compare the size of the objects in each pair. (Emphasize larger)

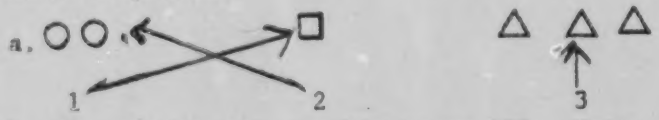
N. Take turns following and giving directions.

O. Discuss "above and below".

P. Use flannel for geometric shapes.

LEVEL B

NUMERATION

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK I	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Count orally by 1's to 100 in short sequences.	1. 145, 254-256		1. F.S. 902--What Numbers Mean	
*2. Count orally by 10's to 100 starting with tens only.	2. 247-248, 251-252, 262			
*3. Identify, read, and write any number from 0 to 100 in short sequences. a.  b. Count pictures or objects to 100. Write numerals to 100, and read them orally.	3. 27-30, 36, 40, 49, 56, 145-146, 246, 254-256, 262			
*4. Identify what number comes after a given number, between two numbers or before any given number for numbers from 1 to 100. a. 1, ___; 1, ___, 3; 5, ___, 7 b. 99, ___; 98, ___, 100; 87, 88, ___, 90, ___, 92	4. BK K 63-66, 80, 83 BK I 147 BK II 11-12, 99-100			

LEVEL B

NUMERATION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK I	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*5. Show with proportional rods (groups of objects) the meaning of "one more than" and "one less than". a. A B C Which picture has one more rod than the first one? A, B, C b. Make the second picture have one more rod than the first. Make the second picture have one less rod than the first.	5. 69-81, 154, 162, 169, 171, 177, 195, 196, 216, 223, 229, 237, 279-280			
*6. Order events by verbally describing the actions that happen first, second, third...last, before, and after.	6. BK II 13-14			

LEVEL B

NUMERATION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK I	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*7. Place an "x" on the object that specifies the ordinal number through 10th.				
a. Put an "x" on the 1st box or put an "x" on the first box. ☒ ☐ ☐				
b. Put an "x" on the 10th box or put an "x" on the tenth box. ☐☐☐☐☐☐☐☐☐☒				
*8. Select which of two (or three) numbers is greater, greatest, smaller, smallest, for number to 100.	8. 43-46, 50-53			
a. Circle the number that is greater than 3. (5) 2, 3, 0				
Which number is the greatest? 5, 2, 3, (8)				
b. Circle which number is the smallest. 53, (35) 55				
Circle which number is smaller than 53. 53, (35) 55				
*9. Show by using number line, short sequences in skip counting such as 12--14--16.	9. BK III 127, 133, 137, 142, 195, 197			

LEVEL B

NUMERATION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES: HM BK I	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*10. Compare two non-matching sets of less than 100 objects to decide which set has fewer or more members. a. {x, x, x} △ {□} b. 98 objects △ 100 objects	10. 9-10, 41-42, 136			
*11. Place > or < between two numbers to indicate the greater or lesser with or without structured groups to 100. 3 < 7 xxx < xxxxxxx; 8 > 6 xxxxxxxx > xxxxxx	11. 52, 103-104, 135, 148, 231, 276, 301			
*12. Recognize an empty set as a set which has 0 members. a. Draw a line under the empty set.	12. 23, 25, 28, 47, 48, 78, 80, 101-102			

LEVEL B

NUMERATION

SUGGESTED ACTIVITIES

A. Prepare simple line drawings to count dot-to-dot.

B. Arrange groups and describe them.

C. Approximate group sizes. Children guess the number, then count after several have guessed.

D. Supplying missing numbers 1--3--5.

E. Taking turns directing one another to "put book on first shelf; third desk; fifth chair".

F. Ask individuals, one at a time, to fill in the missing symbol ($<$, $>$, =) between numerals previously written on the board and have each one explain why he used the symbol he selected.

LEVEL C

NUMERATION

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES: HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Recognize and read numbers through 1000. Write number words through twenty. Teacher--"15", students write. Teacher--"278", students write.	1. 3-6, 99, 263			
*2. Read and write short sequences of numbers from any starting point to 1000. Teacher reads 5, 8, 11, 22 sequence of numbers, students write. Teacher 1, 25, 3, 28, 3, 31.	2. 99-100, 263			
3. Group the members of a given set by twos, fives, tens, and count (by groups) the number of members in the given set. a. Subset	3. 93-94, 263			

LEVEL C

NUMERATION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
4. Use the number line to skip count by 2's, 3's, and 5's.	4. BK III 127, 133, 137, 142, 195, 197			
a. Student counts by 2's and 3's. 1 2 3 4 5 6 7 8 9 10 11 12				
b. Student counts by 5's. 138 139 140 141 142 143 144 145 146 147 148 149 150 151				
*5. Supply the number which is one more, one less, or in between two give numbers.	5. 11-12, 99-100			
a. ___, 46, ___, 48, ___ b. ___, 158, ___, 156, ___				
6. Name, read, and write many different names for the same number.	6. 60, 63, 82, 120			
a. 9 + 3 = 12; 15 - 3 = 12 b. 20 + 12 + 8 = 40; 6 + 26 + 8 = 40				

LEVEL C

NUMERATION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*7. Identify numbers as odd or even to 100. a. Students identify even, odd. 88, 4, 10, 30, 37, 11, 59, 41 b. Same in sequence (circle even, check odd). 15, 16, 17, 24, 32, 55, 94, 101, 103, 110, 123	7. 291			
8. Use ordinal numbers through twentieth to identify position of a particular object in a sequence of objects. a. Teacher lines up students: find which ordinal number Johnny is, 5th, 6th. b. Repeat above only with symbols (such as x's, etc.) instead of people.	8. 13-14			

LEVEL C

NUMERATION

SUGGESTED ACTIVITIES

A. Arrange numbers in order of size.

B. Designate players or teams finishing in a race or game as 1st, 2nd, 3rd, etc.

C. Check attendance by counting by twos, fives, and tens.

D. Develop the order of the months by writing the names on the chalkboard. Then ask which students have birthdays in January, and so on. Then ask, "Who has his birthday in the second month? What is the name of the tenth month?"

E. Place a set of 20 objects in a line on the table. Ask students to exchange the first item with the third, and second with the sixth, etc.

F. Write some numerals for upper-decade numbers on the chalkboard. Assign a row or team to each numeral. At a given signal the first child on each team runs up and writes the numeral for the next number in sequence. He then returns and hands the chalk to the next person on his team and so on.

G. Develop a technique to help the pupils determine whether a number is even or odd. Have the pupils show a set containing 4 disks and then have them arrange them into subsets with 2 disks each. Discuss the idea that the disks in each of these sets can be arranged into subsets with 2 disks each, without any left over.

LEVEL D

NUMERATION

BEHAVIORAL OBJECTIVE	HM BK 3	OTHER	AV	Prepared Materials
Student should be able to: (Review and maintain previous concepts and skills)				
*1. Read and write numbers through 1,000's Read and write short sequences backward or forward. Teacher says number, such as "849"; students write in words or numberals. Student is given numbers in either words or numerals (written); he reads them aloud. Same as above except sequence such as "745, 746, 748. . ." "956, 955, 954. . ." or "650, 654, 658. . ."	1. 7, 10, 11		FS 223--How Whole Numbers Are Made FS 224--Our Set of Numbers	
*2. Determine and write "between" numbers, "greater than" numbers, and "less than" numbers through 1,000's. Write number one higher than first number given: 747 (748), 256 (257), 560 (561) Write number one lower: (919) 920, (524) 525, (608) 609 Write number in between: 258 (259) 260, 756 (757) 758	2. 4-5, 10-11			
*3. Write the appropriate symbol (, , =) to express the relationship between 2 given numbers through 1,000's. 540 220, 830 920, 190 180,560 560	3. 19, 53			

LEVEL D

NUMERATION continued

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Material
Students should be able to: (Review and maintain previous concepts and skills)				
*4. Identify and name, orally, position in space or time of a sequence of objects, events, etc. (space) Position 30-40 objects in space (or symbols on blackboard) and have students point to 21st, 33rd, 27th, etc. object. Point to object and have student say which number (e.g., 30th) it is. (time) Have list of events happening in time (such as election of U.S. President). Have students name as above for space.	4. 12	4. HBW BK 3 73 HRW 36		
5. Skip counts by 3's and 4's to 1,000 backward or forward. Count up by threes: 3, 6, __, __, . . . Count up by fours: 16, 20, __, __, . . . Count down by threes: 999, 996, ___, . . . Count down by fours: 757, ___, ___, . . .	5. 133, 137			
6. Use decimals in money. $.50 = 50 cents, $.10 = 10 cents, 25¢ = $.25, 75¢ = $.75	6. 278-79			

LEVEL D

NUMERATION continued

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skill)				
*7. Identify and name even and add whole numbers to 1,000. Are these numerals even or odd? Write "E" for "even", "O" for "odd". 0 ____, 159 ____, 1000 ____, 1 ____, 273 ____.	7. 226-227	7. HRW BK 3 161, 298 HBW BK 3 4-5		

LEVEL D

NUMERATION

SUGGESTED ACTIVITIES

A. Write the numbers named by words.

B. Match the number with the right words.

C. Have children write dates.

D. Have children look up state population.

E. A number is an idea; it exists only in the mind. Using symbols we are able to communicate this idea.

F. A number line shows the order of numbers. Have children fill in missing numbers.

LEVEL E

NUMERATION

BEHAVIORAL OBJECTIVES	HM BK 4	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Count, read, and write to 1,000,000,000.	1. 20, 208, 209		FS-223 "How Whole Numbers are Made"	
*2. Identify odd and even numbers. State and use rules for addition, subtraction, multiplication of 2 numbers. 1000 99,999 Changing the order of the addend does not change the sum or product. Commutative -- 1 + 2 = 2 + 1 8 + 9 = 9 + 8 2 x 1 = 1 x 2 8 x 9 = 9 x 8 Grouping the addends does not change the sum or product. Associative -- (2 + 3) + 4 = (4 + 3) + 2 (9 + 8) + 9 = (9 + 9) + 8 (1 x 2) x 3 = (3 x 2) x 1 (9 x 8) x 9 = (9 x 9) x 8 Identity -- When one of the addends is 0, the sum will be the same as the other addend. 1 + 0 = 1 9 + 0 = 9 When one of the factors is 1, the product will be the same as the other factor. 1 x 1 = 1 6 x 1 = 6 9 x 1 = 9 When one addend is 0, the other addend will be the difference. 1 - 0 = 1 9 - 0 = 9	2. 5, 203, 318		FS-224 "Our Set of Numbers" FS-227 "Practice Making Whole Numbers" 16mm -- F.15 "What are Decimals?"	

LEVEL E

NUMERATION continued

BEHAVIORAL OBJECTIVES	HM BK 4	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*2. continued Distributive -- When we distribute a factor over addends, we must multiply, each of the addends by the factor and then the products. 1 x 11 = 1 x (10 + 1) 1 x 99 = 1 x (90 + 9)				
*3. Round numbers to 10's 100's, for comparing estimating answers in simple word problems. Round to nearest 10's: 86 = 90; 74 = 70 Round to nearest 100's: 99 = 100; 751 = 800		3. HBW BK5 15-16		
*4. Give numeral for 2, 3, 4, place number written in words, write 2, 3, 4, place number in words.	4. 17, 18, 20, 208			
*5. Write decimal fractions for common or mixed fractions or 10 or 100 demoninator--vice versa. 1 1/10 = 1.1; 9 9/10 = 9.9 1 1/100 = 1.01; 9 99/100 - 9.99 vice versa	5. BK 5 330, 332-333	5. HBW BK5 236-239		

LEVEL E

NUMERATION continued

BEHAVIORAL OBJECTIVES	HM BK 4	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
6. Write number and the words for decimals to 1000ths. 5.3 - five and three tenths 6.91 = six and ninety one hundreds 1.600 = one and six hundred thousands Vice Versa		6. HBW BK5 240, 261		
7. Convert decimal fractions from thousands to other forms. 7.9 = 7 9/10 2.03 = 2 3/100 5.199 = 5 199/1000		7. HBW BK5 261		
8. Orders decimal numerals to 100.009. Arrange in order 7.5 109.01 1.999 1.30		8. HBW BK5 236-239		
*9. Identify the numbers which precede or follow given numbers.	9. 11, 15			
10. Classify any number from 2 through 100 as a "Prime" or "Composite" number.	10. 202-205			

LEVEL E

NUMERATION continued

BEHAVIORAL OBJECTIVES	HM BK 4	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous conepts and skills) 10. Continued Are these numbers prime or composite. Find their factors: 2 = 1 x 2 lowest prime -- highest 97 = 97 x 1 4 = 2 x 2 x 1 lowest composite -- highest 100 = 2 x 2 x 5 x 5				

LEVEL E

NUMERATION

SUGGESTED ACTIVITIES

A. Practice may be given in writing and showing numbers, such as: Write a three-place number that has no ones in the one's place. Write the largest two-place number you can think of.

B. Four numbers larger than three places, a device similar to a simple abacus, made of sticks spools, may be used to show place value.

C. Give practice in reading and writing six-place numbers and in using them in social applications.

D. Use the ordinal numbers from first through thirty-first chiefly in relation to the calendar.

LEVEL F

NUMERATION

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Round numbers to nearest thousands, ten thousands, millions. $1,095 = $1,100, $285,698 = $300,700		1. HBW BK5 1.-16		
*2. Write numerals, or the word name, for a 5, 6, or more place number. Read or write names of numbers. Write numerals and words from given oral numbers.	2. 18	2. HBW BK5 4, 5, 13		
3. Locate prime numbers to 100 on a chart. Write numbers grom 1-100 and have students write prime numbers between 20-40, etc. Chart: 3 4 5 9 50 6 9 8 0 5 82 68 5 9 48 29 38 54 10 92 83 47 59 37 74 95 03 92 etc.	3. 172-78			
*4. Identify and name even and odd whole numbers. 5,463, 372, 341	4. 5, 180	4. HBW BK5 11, 12		
5. Demonstrate an understanding of the relationship between decimals and common fractions by rewriting percent notation.	5. BK 6 318, 320, 321			

LEVEL F

NUMERATION continued

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills) 5. Continued Standardize from 3/100 = 3%, then .03 5% = 1/20 = .05, 25% = 1/4 = .25, 33% etc.				

LEVEL F

NUMERATION

SUGGESTED ACTIVITIES

A. Interpreting distance and time relations reported in connection with travel, speed light, etc.

E. Comparing the quantities of natural resources possessed by various countries.

C. Discuss how various governmental units spend the tax dollar.

D. Noting use of decimals and percents in newspapers and magazines.

E. Computing interest earned on savings accounts.

F. Practice rounding-off numbers in money problems.

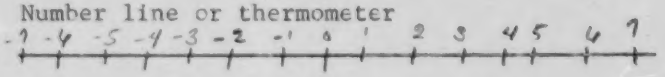
LEVEL G

NUMERATION

BEHAVIORAL OBJECTIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Test any nuber to determine if it is prime or composite. (Can it be divided by 1 or itself) a) 13/2 not even 13/3 not even therefore prime 8/2 = 4 8/3 not even therefore composite b) 257/2 not even 257/3 not even therefore prime 447/2 not even 447/3 - 149 therefore composite	1. 168, 229	1. HRW BK6 33, 192 HBW BK6 57	FS-227 Practice Making Whole Numbers	
*2. Find prime factors of given numbers. a) 12= 2 x 2 x 3 b) 216 = 2 x 2 x 2 x 3 x 3 x 3	2. 169-175			
*3. Locate, write negative numbers, on number line, thermometer. a) Locate -3 on number line b) Locate -1.25 on number line	3. 332-340			

LEVEL G

NUMERATION

BEHAVIORAL OBJCETIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
4. Illustrate use of negative numbers. Number line or thermometer 	4. 332-340			
*5. Write numbers in scientific or other exponential notation. (positive powers) a) $100 = 10 \times 10 = 10^2$ b) $1,256,976,245 = 1,256976245 \times 10^6$	5. 17, 19, 266, 298			

LEVEL G

NUMERATION

SUGGESTED ACTIVITIES

A. Present an exercise in factoring with a group of pupils taking turns at the chalkboard while other pupils are working at their desks.

B. Draw a picture of a number line; choose some point and label it with "0". Show positive and negative numbers on each side of "0".

C. Write a symbol such as 10 x 10 x 10 x 10; then write 10^4 as another symbol that names the same number.

D. Provide brief flashcard drill in reading numbers in exponent form and then giving their power or product: 2^3 is 2 to the third power, which is 8.

LEVEL B

PLACE VALUE

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES HM BK I	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Show zero as a place holder. 50 = ___ tens ___ones	1. BK II 93-95, 263-266		1. F.S. 903--Zero as a Place Holder	
*2. Interpret place value by grouping sticks to show, "37 is the same as three tens, seven ones".	2. 141-142			
*3. Write the numeral which names a structured group of up to 100 objects as--tens and--ones. a. 5 ___ tens ___ ones; 93 ___ tens ___ ones b. //////////// //////////// //////////// //////////// ////// 4 tens 6 ones	3. 122-127, 142, 253			
*4. Write the digit which is in the 10's place as requested for a given number. State the place value of a particular digit. a. Write the number that is in the tens place. 79 ___, 53 ___, 48 ___, 1 ___ b. Write the place value for each of the following numbers. 344 3 ___ 4 ___ 4 ___; 528 5 ___ 2 ___ 8 ___	4. 121-130, 137-144, 247-248			

LEVEL B

PLACE VALUE

SUGGESTED ACTIVITIES

A. Use spool boards, little counting blocks, and little counting discs that can easily be arranged in piles of 10.

B. Introduce pocket chart for 10's and 1's. Place pocket chart on chalk tray and place correct figures above pocket chart on board.

C. Children show number stories on their place value chart.

D. Counting sticks put in rows of 10.

E. Continued use of peg board.

F. Use line abacus to show place value.

G. Make a plastic apron with three pockets. Paint the values on each pocket.

LEVEL C

PLACE VALUE

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES: HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
#1. Place > or < between two numbers.	2. 7-10, 12			
a. Place > or < in the circle between the following numbers: 9 ◯ 13 ◯ 115 ◯ 805 ◯ 13 ◯ 17 ◯ 196 ◯ 169 b. Same directions as above: 307 ◯ 570 ◯ 952 ◯ 949 ◯ 1,465 ◯ 1,568 ◯ 659 ◯ 595				
*2. Write a given number as ___ hundreds, ___ tens and ___ ones and in expanded notation using the + sign.	2. 95-97			
a. 105 = 1 hundreds 0 tens 5 ones = (100) + (0) + (5) b. 189 = 1 hundreds 8 tens 9 ones = (100) + (80) + (9)				
*3. Write the digit which is in the one's, ten's, or hundred's place as requested. State the place value of a particular digit.	3. 265			
Write the digit in the ten's place in the following numbers. 156 (5) 25 (2) 86 (8) 194 (9) 15 (1) 65 (6) Same for hundreds or units. State the place value (hundreds, tens, or units) of the underlined digits. 156 ___ 25 ___ 86 ___ 194 ___ 15 ___ 130 ___				

LEVEL C

PLACE VALUE continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*4. Write numbers to 999 in columns for hundreds, tens, or ones according to the place value of each digit.	4. 264-266			
a. Write the digits of the following numbers in the hundreds, tens, and units columns: Hundreds Tens Units 4 _____ ____ ____ 25 _____ ____ ____ 149 _____ ____ ____				
b. Same directions as above: Hundreds Tens Units 196 _____ ____ ____ 125 _____ ____ ____ 96 _____ ____ ____ 117 _____ ____ ____				
*5. Use physical objects to show regrouping.	5. 179, 202, 207, 257			
6. Write the appropriate symbol ($>$, $<$, =, $\neq$) in mathematical sentences to make sentence true or false.	6. 27-28, 32, 59, 77, 156, 198			
a. Use $>$, $<$, or = in the circle to make the sentence true: 3 + 4 ◯ 7, 40 + 7 ◯ 42, 2 - 1 ◯ 3, 90 - 4 ◯ 86				
b. Use = or $\neq$ to make the sentences false: 13 + 0 ◯ 9 + 4, 14 + 6 ◯ 20 - 1, 100 - 30 ◯ 64 - 6, 42 + 24 ◯ 90 - 4				

LEVEL C

PLACE VALUE

SUGGESTED ACTIVITIES

A. Introduce place value by showing how the abacus is constructed and used.

B. Use manipulative materials such as bundles of sticks to demonstrate 21 as two tens and 1 one. Use a hundred chart or spool board.

C. Conduct an oral drill involving numbers of tens.

D. Use the place value chart and review zero as a place holder.

E. Counting, recognizing, and reading numbers from 0 to 1,000. Games, paper, coins, discs, pegboard, and pictures can be used.

LEVEL D

PLACE VALUE

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Identify place value of 1's, 10's, 100's, 1,000's in words or numbers. In the numeral 69, the number _____ (write out) stands for tens. In the numeral 3000, the 3 stands for 100's, 10's, 1000's (circle answer).	1. 8-9, 20, 25-27, 240-241		16mm F-12 "What Are Decimals?"	
*2. Use comma (,) to 1,000's place. A comma is sometimes used between the 100's place and 1000's place to make the number easier to read. Place the comma where it belongs: 5 9 8 9 9 9 9	2. 8-9, 18, 25-27, 240-244, 261			
*3. Write numbers in expanded notation to 1,000's. 11 = 10 + □ 999 = □ + □ + □	3. 8, 20, 25-27, 241			
*4. Regroup, rename numbers for borrowing and carrying. Fill in squares with proper number: 15 — Hundreds: 0, Tens: □, Ones: 5 15 — Hundreds: 0, Tens: 0, Ones: □ 332 — Hundreds: 2, Tens: □, Ones: 2	4. 320-321			

LEVEL D

PLACE VALUE continued

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills) 5. Add and subtract problems related by multiples of 10. 6. Write decimals in expanded notation. (Words, fractions, decimals) Write these decimals in expanded form: .12 = □ + .02, .012 = □ + □ 7. Identify place value of decimals, words, fractions (decimals to hundredths). Identify place value: seven-tenths = 7/10 = .7, .6 = ____ = six ____, in 87/100 what number is in tenth's place? 8. Place value chart. Decimals, to hundredths. Fill in the blanks with proper place value of the given decimal: .10 — Tenths: 1 .98 — Tenths: 9, Hundredths: 8				

LEVEL D

PLACE VALUE

SUGGESTED ACTIVITIES

A. Draw a line from each number to the corresponding number words:

1090	one thousand nine hundred nine
190	one hundred ninety
1009	one thousand ninety
1909	one thousand nine

B. Show how the abacus is constructed and used.

C. Use manipulative materials such as bundles of sticks to demonstrate 21 as 2 tens and 1 one. Use a hundred chart or spool board.

D. Review zero as a place holder.

F. Conduct an oral drill involving numbers of tens and hundredths.

LEVEL E

PLACE VALUE

BEHAVIORAL OBJECTIVES	HM BK 4	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Identify place value digits to 1,000,000.	1. 20, 208	1. HBW BK4 248-250		
*2. Write numbers to 1,000,000 in expanded notation (Words/numbers "+" signs). 368 = 300 + 60 + 8 987,364 = 900,000 + 80,000 + 7,000 + 300 + 60 + 4 134 = one hundred + three tens + four ones 485,916 = four hundred, thousands + eight ten thousands + five thousands + nine hundreds + one ten + six ones	2. 12-20	2. HBW BK4 249-250 HRW BK4 761, 79-81		
*3. Use < or > to 1,000,000 36 > 21 463,502 > 463,205	3. 10-11			
4. Use multiples of 10 to generalize multiplication and division facts. Use factors to 5 x 10. 10 x _____ = 20 50 + _____ = 10 20 + _____ = 10 55 x _____ = 50	4. 168 BK5 184	4. HRW BK4 273-274		

LEVEL E

PLACE VALUE

SUGGESTED ACTIVITIES

A. Develop the meaning of number by use of the number-value chart.

B. Numbers as high as billions may be shown on a hundred spool number board.

C. Extra correlated unit to library -- dewey decimal, to hundredths (as dollars and cents).

LEVEL F

PLACE VALUE

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Complete a place value chart for 4 or more digit numbers. THOUSANDS HUNDREDS TENS ONES 0 10 100 1000	1. 17	1. HBW BK 5 2, 4		
*2. Write 10 as a power. Identify the base and exponent. 10^2 exponent = 10 x 10 = 100, 10^4 etc. base	2. 21,30			
*3. Rename exponential form as $2^3 = 2 \times 2 \times 2$ $6 \times 6 \times 6 \times 6 = 6^4$ $12 \times 12 \times 12 = 12^3$ $5^3 = 5 \times 5 \times 5$ $9^4 = 9 \times 9 \times 9 \times 9$	3. 20, 177			

LEVEL F

PLACE VALUE continued

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Material
Students should be able to: (Review and maintain previous concepts and skills)				
*4. Distinguish between numerals such as 2^3 and (2 x 3) by showing their inequality as : 2 x 2 x 2 ≠ 2 x 3 Prove $2^3 \neq 2 \times 3$--$2^3 = 2 \times 2 \times 2 = 8$ $2 \times 3 = 6$ therefore $2^3 \neq 2 \times 3$ because $8 \neq 6$ Prove $6^6 \neq 6 \times 6$--$6^6 = 6 \times 6 \times 6 \times 6 \times 6 \times 6 = 432$ $6 \times 6 = 36$ therefore $6^6 \neq 6 \times 6$ because $432 \neq 36$.		4. HRW BK6 3		
*5. Write the expanded form of given numerals. 813,027 = (8 x 100,000) + (1 x 10,000) + (3 x 1,000) + (0 x 100) + (2 x 10) + (7 x 1)	5. 13, 17			
6. Read and chart decimal numbers to millionths. 1 2 6 1 4 3 tenths hundreds thousands etc.		6. HBW BK5 235-39, 243, 261		

LEVEL F

PLACE VALUE continued

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
7. Identify place value of mixed decimals to 1000ths. What place value does each circled number hold? 62.① 10.12⑤		7. HBW BK5 236-37, 239-40, 241		
8. Write a decimal as a whole number plus sum of decimal part to thousandths place. 6 + 3/10 = 6.3 145 + 945.1000 = 146.945		8. HBW BK5 235-41		
9. Work with place value chart for mixed decimals. 1000's 100's 10's 1's 1oths 100ths 1000ths Place the following on the above place value chart: 1) 6 2) .6 3) 59 4) .003 5) 300 6) 4.398		9. HBW BK5 241		

LEVEL F

PLACE VALUE

SUGGESTED ACTIVITIES

A. How gas and electric meters illustrate place value.

B. Construct a place-value chart of six places, labeling each.

C. Demonstrate with abacus.

D. Present the numeral 186,000. Ask, "What part of that numeral would name a number less than 10 but greater than 1? 186 is too large; 18.6 is too large; 1.86 is less than ten and greater than 1. 1.86 is only part of the numeral. Ask, "By what must we multiply 1.86 to give 186,000? Then $1.86 \times 10{,}000 = 186{,}000$. Write 10,000 as a power of 10 in exponent form (10^5). $186{,}000 = 1.86 \times 10^5$."

LEVEL G

PLACE VALUE

BEHAVIORAL OBJECTIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
1. Make decimal place value chart with positive exponents. Fractions instead of negative exponents. Limit 10. Take number beginning in (thousands) place and express it in exponential notation. 1×10^3	1. 298, 301	1. HRW BK6 236 HBW BK6 84		

	Units
Ones	1
Tens	10
Hundreds	100
Thousands	1,000
Ten-Thousands	10,000
Hundred-Thousands	100,000
Millions	1,000,000
Ten-Millions	10,000,000
Hundred-Millions	100,000,000
Billions	1,000,000,000

Take numbers (beginning) with .01 (hundredths) and express in fractional form.

.1
.01
.001
.0001
.00001
.000001
.0000001
.00000001
.000000001
.0000000001

LEVEL G

PLACE VALUE Continued

BEHAVIORAL OBJECTIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
2. Write expanded form of numeral with/without exponents $(2 \times 10^6) + (5 \times 10^5) + (4 \times 10^2) + (3 \times 10^1) + 9$	2. 16, 17, 19, 33, 37, 38, 43-44, 56-58, 170-172 212-220, 222-224, 233, 260, 266, 298, 301, 303, 304			

LEVEL G

PLACE VALUE

SUGGESTED ACTIVITIES

A. Ask the children to tell the meaning of decimals as related to money.

B. Discuss the meaning of tenth of a mile as shown on most automobile speedometers.

C. Write a number on the chalkboard such as 43.187 and have children tell what place each figure occupies.

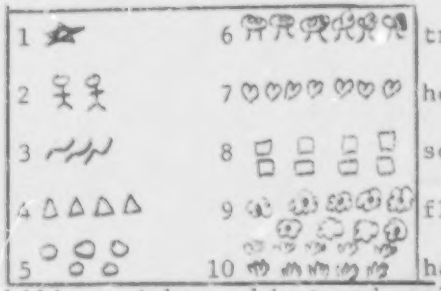
LEVEL A

ADDITION and SUBTRACTION*

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK K	OTHER	AV	Prepared Materials
Students should be able to:				
*1. Supply verbally the correct answers to oral questions aimed at getting information from a picture.			1. 16mm F-13 Addition is Easy	
*2. Identify the process of addition while joining sets. a. {△,○,□} ∪ {★} 3 + 1 = b. {★,▽,△,□,○} ∪ {★,□,△} 5 + 3 =	2. 85-91			
*3. Circle numbers to identify how many objects are in each of two sets and in both sets together. a. A:{△,△,△} B:{○,○} Circle how many objects are in each set. A = 1, 2, (3) 4, 5 B = 1, (2) 3, 4, 5 Circle how many objects are in both sets. 1, 2, 3, 4, (5) 6 b. A:{x,x,x,x,x} B:{○,○,○,○} Circle how many objects are in each set. A = 1, 2, 3, 4, (5) 6, 7, 8, 9, 10 B = 1, 2, 3, (4) 5, 6, 7, 8, 9, 10 Circle how many objects are in both sets. 1, 2, 3, 4, 5, 6, 7, 8, (9) 10	3. 85-91			

LEVEL A

ADDITION and SUBTRACTION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK	OTHER	AV	Prepared Materials
Students should be able to:				
4. Manipulate objects to illustrate addition and subtraction facts through 10. Felt board with felt objects. (surplus of objects) star, men, worms, triangles, circles  trees, hearts, squares, flowers, hands Have the children pick an object and number such as: 8 sticks. Give the child 3 sticks and ask how many more they need to make 8, etc.	4. 85-96			
5. Use the symbols +, -, and = to form sentences. a. 3 + 4 7 b. 3 4 = 7 c. 7 4 = 3	5. Book I -75, 61			

LEVEL A

ADDITION and SUBTRACTION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES HM BK K	OTHER	AV	Prepared Materials
Students should be able to:				
6. Show by use of objects or on the number line that 0 added or subtracted to any number gives the same number. Felt board used in #5, this level. Ask how many more children would need to make 5 if they have 5 in their hand, 0, therefore 5 + 0 = 5.	6. Book I 101, 102, 309, 310		6. F.S. 903--Zero as a Place Holder	
7. Use sets of objects or a number line to determine and name the sum or difference. a. {0, 0, 0} , {0, 0, 0, 0} 3 + 4 = b. 0 1 2 3 4 5 6 7 8 9 10 7 + 3 = 5 + 5 =	7. 85-96			
8. Name the sum or difference when given an addition or subtraction fact through sums of 10 (horizontally and vertically).	8. 85-91 (to six) Book I 233-240, 242, 244			

LEVEL A

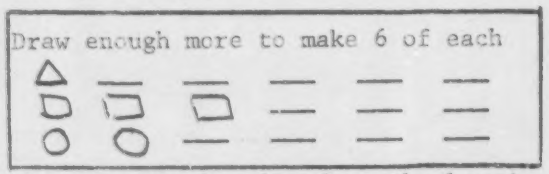
ADDITION and SUBTRACTION

SUGGESTED ACTIVITIES

A. Children should be encouraged to draw pictures to show what the combination "looks like".

B. Help children develop awareness of grouping in many situations, as:
   A. Wheels on a car
   B. Fish in a bowl
   C. Legs on a chair
   D. Chairs at a table

C. Work sheets like the one below may be used:



This may also be placed on the board.

D. Teacher find ways to show facts with symbols.

LEVEL B

ADDITION and SUBTRACTION

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK I	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
1. Supply verbally, the correct answers to oral questions aimed at getting information from a picture. Felt board with felt objects. How many 's are on the board? How many animals...cows, ducks, etc.			1. F.S. 900--Compound Subtraction	
*2. Write the number of objects in each of two sets and the number of objects when put together. Sums to 12. Same concept in example as Level A, Addition, #4; more difficult numbers.	2, 3, 5. 61-70, 75-82, 91-96, 151-157, 159-164, 165-174, 219-230, 233-240, 244, 278-288			
*3. Circle or fill in the correct numerals for pictured addition statements. Circle or fill in numerals for pictured subtraction statements. Sums to 12. a. Circle the correct answer. [○,○,○,○] + [○,○,○] 4, 5, 6, (8) [△△△] − [★★★] 1, 2, 3, (4) 5, 7, 8 b. Write in the correct sum. [○,○,○,○ / ★,★,★] + [✕,✕,] = △ + △ = 12 [✕,✕,✕,✕,✕ / ✕,✕,✕,✕,✕] − [✕,✕,✕ / ✕,✕,✕] = 12 − △ = 5				

LEVEL B

ADDITION and SUBTRACTION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK I	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*4. Solve or complete 1 step word problems with pictures. Sums to 12. a. x + x = xx One plus one equals ___ b. xxxxxx + xxxxxx = xxxxxxxxxxxx Six plus six equals ___	4. 197-198			
*5. Complete addition and subtraction sentences with missing sums (differences) or addends associated with familiar number families. Sums to 12. a. Number family of 5--2 + 3 = ___, 5 + 3 = ___, 5 + 2 = ___ b. Number family of 12--6 + 6 = ___, 12 - 6 = ___, 8 + 4 = ___, 12 - 8 = ___, 12 - 4 = ___	5. see 2 above			
*6. Find solutions for sentences like + = 7 in which many correct solutions are possible. a. Fill in: [2] + [0] = [ ], [ ] + [ ] = [2] [ ] + [ ] = [ ], [2] - [ ] = [ ], [2] - [2] = [0], [2] - [1] = [ ] b. Fill in: = 12 (any combinations) 12 - □ = △	6. BK II 23-24, 137			

LEVEL D

ADDITION and SUBTRACTION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK I	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*7. Identify and name the missing operational sign in problems. a. $5 \triangle 2 = 3$, $3 \triangle 4 = 7$ b. $7 \triangle 3 = 4$; $11 \triangle \triangle = 9$	7. 231, 301, 106, 156			
*8. Use one to one matching to compare members of given sets of objects and write a subtraction equation to express his action. 6 ****** _____ Difference 4 #### a. x x x x x x # # # # How many more x's are there than #'s? ____ b. x x x x x x x x x x # # # # # # # How many more x's are there than #'s? ____ How many x's are there? ____ How many #'s are there? ____	8. 71-80, 91-94, 102, 107, 151-153, 157, 160-161, 166-168, 220-222, 226-228, 234-236, 278, 283-284, 291			

LEVEL B

ADDITION and SUBTRACTION

SUGGESTED ACTIVITIES

A. Dramatize basic facts by using the children in the classroom (2 girls and 2 girls).

B. Use concrete objects, sticks, blocks and other items.

C. Use pictures on the flannel board: ducks, rabbits, or cats.

D. Pupils reproduce the grouping with their counters, then by drawing picture of the fact and telling about them.

E. Teacher shows the fact with symbol.

F. Keeping score in ring toss, ten pins, and other games.

G. Writing combinations to correspond to number of dots on dominoes.

H. Help children use dot patterns as a means of discovering the addition fact.

I. Have children make a variety of number cards for individual and small group practice on facts as needed.

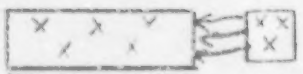
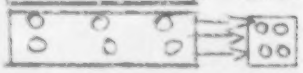
J. Have pupil show facts with colored beads on a string.

K. Have children draw pictures illustrating the addition and subtraction facts.

GAMES: Donkey Game--Make a big donkey on tagboard. Put a pocket on its side. Then give out several tails on which are printed addition facts. The teacher slips a number card into the pocket. Those children who have an addition fact whose sum is the number on the donkey bring their cards up front. If someone makes an error the class many shout, "Hee-haw". This may be used for subtraction or addition facts to 12.

LEVEL C

ADDITION

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
1. Use the word when given the symbol and the symbol when given the word for =, +, -. Circle the numerals which indicate sum or addends in a number sentence. a. Orally state the following symbols for a correct number sentence. 3 ◯ 2 = 5, 1 ◯ 2 = 3, 9 ◯ 3 = 12, 10 ◯ 4 = 6 b. Write the correct symbol in place of the word. 7 plus 2 = 9, 5 minus 1 = 4, 8 plus 3 is ___, 12 minus 6 is ___.	1. 15-16, 19-20			
*2. Fill in numbers (missing sums and/or addends) to make "true number sentences" for pictured addition and subtraction situations. a.  5 + ___ = 8 b.  6 - ___ = 2	2. 15-26, 29, 40, 42, 46 48, 104, 114, 128			
3. Select "other names for numbers" by matching addition or subtraction expressions (N + M) or (N - M) with pictured groups or numerals to 20. a. Match X + X = XX → 1 + 1 = 2 → 2 - 1 = 1 XX - X = X → 2 - 1 = 1 → 1 + 1 = 2 b. XXXXX + XXXXXX = XXXXXXXXXXX 5 + 7 = 12 or 7 + 5 = 12 XXXXXXXXXXXX - XXXXX = XXXXXXX 12 - 5 = 7 or 12 - 7 = 5	3. 30 HK III 6-7			

LEVEL C

ADDITION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES: HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
4. Write = or ≠ sign to identify true or not true addition or subtraction statements. Create true number sentences by correcting incorrect sentences, changing only one number. a. Fill in = or ≠. If the sentence is ≠ then correct sentence by re-writing the correct symbol. 2 + 2 ◯ 5, 6 - 4 ◯ 2 b. 11 + 1 ◯ 10, 9 - 4 ◯ 5	4. 27, 28, 32			
*5. Do column addition with two addends for any two or or three digit numbers--carrying is to be introduced. Check addition problems by adding in reverse direction. a. 37 +52 = 89 ; 52 +37 = 89 b. 429 +370 = 799 ; 570 +429 = 999	5. 153-154, 157-167, 212			

LEVEL C

ADDITION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*6. Solve addition problems with three or more addends. a. $\begin{array}{r} 1 \\ 4 \\ +8 \\ \hline 8 \end{array}$ $\begin{array}{r} 2 \\ 3 \\ +9 \\ \hline 14 \end{array}$ b. $\begin{array}{r} 1 \\ 9 \\ +6 \\ \hline 16 \end{array}$ $\begin{array}{r} 15 \\ 2 \\ +3 \\ \hline 20 \end{array}$	6. 33-38, 89, 118, 125, 152			
7. Place $>$, $<$, $\neq$, or = between two addition expressions to show their relationship. Put the correct symbol ($\neq$ or =) in circle to make a true sentence. $5 + 6 \bigcirc 3 + 7$ $\quad$ $3 + 6 \bigcirc 8 + 1$ $9 + 6 \bigcirc 7 + 7$ $\quad$ $7 + 8 \bigcirc 9 + 9$ $3 + 4 \bigcirc 2 + 6$ $\quad$ $9 + 8 \bigcirc 10 + 8$	7. 27-28, 59, 77, 156, 198 BK III 53			

LEVEL C

ADDITION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES: HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
8. Add three single digit numbers in two different ways to illustrate the associative principle for addition. Put in parenthesis to show which numbers are added first. Add the following groups of numbers in two different ways by following the example. (2 + 3) + 1 = 5 + 1 = 6 2 + (3 + 1) = 2 + 4 = 6 1 + 6 + 2 = 3 + 5 + 4 = 1 + 6 = 2 = 3 + 5 + 4 =	8. 33-38, 44, 107-108, 125-126, 145			
*9. Add carrying to 10's and/or to 100's using 2 or 3 numerals, 2 or more addends. 34 99 +26 +99 60 198	9. 205-212, 261, 277 BK III 180-182			
10. Write or complete addition equations that show the commutative principle for addition. Fill in the circle with the correct number to make the sentence true: 9 + 6 = ○ + 9 12 + 5 = ○ + 12	10. 18, 31, 39, 43, 49-50, 116, 124, 132, 137			

LEVEL C

ADDITION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
11. Recognize zero as the identity element of addition. Complete the following number sentences. $3 + 0 = \bigcirc$ $\quad 0 + 9 = \bigcirc$ $4 + \bigcirc = 4$ $\quad 18 + \bigcirc = 18$	11. 25, 39-42, 43, 47, 310			
12. Add two numbers using expanded notation. a. $10 + 4 = 10 + 0 + 0 + 4 = 10 + 4 = 14$ $\quad 12 + 6 = 10 + 2 + 0 + 6 = 10 + 8 = 18$ b. $11 + 8 = 10 + 1 + 0 + 8 = 10 + 9 = 19$ $\quad 17 + 3 = 10 + 7 + 0 + 3 = 10 + 10 = 20$	12. 145, 158, 161-163, 177, 180, 199, 203-205, 267-268			
13. Solve one step word problem. Jane had two brothers and three sisters. How many brothers and sisters did Jane have in all?	13. 37, 121, 123, 168, 182			

LEVEL C

ADDITION

SUGGESTED ACTIVITIES

A. Stimulate an interest in addition and subtraction by providing manipulative materials such as discs, puzzles, games, dominoes, practice cards, or place value holder.

B. Make small fishes with combinations on them and have a fish pond. If the child is able to give the sum he may keep the fish.

C. Show the grouping on a flannel board. Groups may be represented with circles, squares, starts, or other simple pictures.

D. Have pupil make a drawing of some kind to represent the fact.

E. Pupil should be able to apply the given fact in verbal problems or statements.

F. Have the pupil reproduce the grouping with markers or on a fact finder.

G. Have the pupil use the facts in problems of his own making to prove that he will be able to apply it confidently in many varied situations.

H. Groups of objects can be used to make up stories of number families.

I. Have children work in pairs or small groups with flash cards keeping a record of their successes and trying to better their record.

J. Use dominoes, spinno and other appropriate games to increase familiarity with the combinations and lead to immediate recall.

K. Have children bring materials which can be grouped; examples: cartons, juice cans, straws, etc.

LEVEL D

ADDITION

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Master sums through 20. Timed test.	1. 38			
*2. Column addition 2 addends, 3 or more digits. 120 9362 265 514	2. 112-113, 244			
*3. Find missing addends, 3 or more digits. Sums to 20. 6 + 2 + □ = 12, 9 + □ + 5 = 19				
*4. Use words sum, addend and can label parts. Put an "A" for addend or "S" for sum in each frame to show which is missing. 3 + □ = 10, 9 + 6 = □, 26 19 +□ − 6 30 □	4. 34-35	4. HRW BK 3--5 HBW BK 3--6		

LEVEL D

ADDITION continued

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*5. Add carrying to 10's and/or 100's, using 3 digit numerals of 2 or more addends, to 2000. 185 738 234 537 863 746 722 1601 532 20 1532	5. 180-182, 185, 265, 270, 281, 319-320			
*6. Find sums, column addition. Using 3 or more addends of 1 or two digits. Sums to 50. 9 9 6 5 7 6 0 8 5 2 3 1 8 9 5	6. 40-41, 45, 51			

LEVEL D

ADDITION continued

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*7. Utilize the inverse relationship between an addition sentence and 2 subtraction sentences. Since 5 + 4 = 9; then 9 - ___ = 4 and 9 - ___ = 5 Do the same with the following addition numbers sentences: 15 + 29 = 44 and 256 + 394 =	7. 35, 48, 57			
*8. Demonstrate use of associative and commutative laws. 6 + 8 = 8 + 6, 175 + 25 = ___ + ___, 394 + 567 = ___ + ___, 568 + ___ = 350 + ___ Use the associative principle (grouping) to solve the following equations: (6 + 4) + 5 = 6 + (4 + 5), 31 + (7 + 16) = (___ + ___) + 16, 56 + (230 + 797) = (___ + ___) + 797	8. 35, 40-43, 114, 124, 314-315			
9. Solve multiple- step word problems.	9. 13, 23, 46-47, 49, 54-59, 73, 79, 90, 103-105, 107-109, 122, 153, 183, 234-235, 246-248, 280, 296, 320-321, 339			

LEVEL D

ADDITION

SUGGESTED ACTIVITIES

A. Type a sheet which may be used in the diagnosis of number facts.

B. Show the fact by use of real objects or by pictures of them.

C. Objectify the fact with paper tickets, counters, or other manipulative materials.

D. Reproduce the facts by placing, touching, or drawing objects.

E. Write the fact in symbolic form.

F. Use extend column addition.

G. Give the children experiences in subtracting mentally.

H. Children will enjoy making up and doing "number tricks."

I. Use addition games on blackboard and keep score.

J. Use puppets and puppet stage to illustrate combination.

K. Have children make up story problems.

LEVEL E

ADDITION

BEHAVIORAL OBJECTIVES	HM BK 4	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Do column addition 3 or more digit numbers and 2 or more addends. 2 3 1 5 4 2 +2 0 3 9 7 6	1. 46-48, 52, 55, 64-65 271, 286, 316			
*2. Add with carrying for 4 or more digit numerals with 2 addends. 9,587 +6,335 15,922	2. 52, 55, 64-65, 176, 190, 222, 223, 325			
*3. Solve multiple-step word problems. Mary wants to buy one dozen apples for her mother at two for 5¢ and also two oranges for herself, at 2¢ a piece to eat on the way home. What was the amount of her purchase?	3. 42-43, 62, 122-123			

LEVEL E

ADDITION continued

BEHAVIORAL OBJECTIVES	HM BK 4	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain prevous concepts and skills)				
*4. Use inverse relationship of addition and subtraction to solve problems with missing sums, differences, addends, operational signs in horizontal or vertical notation. $8 - \underline{n} = 3$ $\quad$ 1,349 558 n 1,897	4. 36-37, 54, 332			
5. Add 2 mixed numbers to thousands (whole no.'s and hundredths (decimals). 6.8 $\quad$ 8,560.12 $\quad$ 2345.60 5.7 $\quad$ 7,398.70 $\quad$ +1789.39 12.5 $\quad$ 15,958.82		5. HRW BK5 263-264		
6. Uses commutative and associative properties in rearranging and renaming 3 or more addends into an "easiest form" for solving. 9 + 2 = 2 + 9 14 + 3 + 16 = (14 + 3) + 16 1,468 + 982,437 = 982,437 + 1,468 1,468 + 999,999 + 6,434 = (1,468 + 999,999) + 6,434	6. 36, 38-39, 321			

LEVEL E

ADDITION

SUGGESTED ACTIVITIES

A. Have the children keep a record of the basic addition facts missed on the inventory test and encourage them to learn these facts.

B. Children may use toothpicks or discs to give meaning to the combinations. Practice should be given to make the response automatic.

C. Let the children make up their own problems and give to the class.

D. Give the children experiences in adding mentally. Stress (number quickies) $9 \times 3 + 3 \div 10 \times 6 + 2 \div 2 =$

E. The place holder may be used to help children visualize steps in addition.

LEVEL F

ADDITION

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Add--carrying 4 or more place numbers--2 or more addends. 3,625 + 6,172 + 1,450 = 11,202 118,956 + 897,026 + 100,241 + 765,420 = 1,881,643	1. 50, 317	1. HBW BK5 25, 27-28		
*2. Add 2 or more numbers with whole number parts and decimals to ten thousandths. 21.1056 + 15.2705 + 06.5082 = 42.8843 105.021351 + 10.615032 + 1062.003526 = 1177.639909		2. HBW BK5 263-264		

LEVEL F

ADDITION

SUGGESTED ACTIVITIES

A. Keeping a record of personal savings, deposits, withdrawals, and balances

B. Keeping a record of allowances and expenses.

C. Use flash cards.

D. Totaling sales slips with irregular column addition and check.

LEVEL G

ADDITION

BEHAVIORAL OBJECTIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Add 2 negative numbers, use number line or thermometer.	1. 334-338			
a) -5 -4 -3 -2 -1 0 1 2 3 4 5 -1 -1 +-3 +-1 Jump from -3, 1 unit to left of -4 -2 jump from -1, 3 units to left.				
b) -25 -20 -15 -10 -5 0 5 10 15 20 25 -9 -6 +-2 +-15 Students must interpolate -11 -21 between pointed numbers.				
*2. Add negative and positive numbers. Use number line or thermometer.	2. 333-335, 337, 338, 340			
a) -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 -7 -9 (+ to right) +-3 + 9 (- to left) -2 0				
b) -25 -20 -15 -10 -5 0 5 10 15 20 25 -20 -18 +-15 + 13 -5 -5				

LEVEL G

ADDITION

SUGGESTED ACTIVITIES

A. Introduce the concept of addition of integers by "taking trips" or "making jumps" on the number line.

B. Recording and ranking days of month by amount of rainfall.

C. Note use of decimals and percents in newspapers and magazines.

LEVEL C

SUBTRACTION
(combined with Addition Level C, see preceding pages)

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Subtract through 3 digits--no borrowing 100's place. a. 27 -12 = 15; 35 -23 = 12 b. 96 -32 = 64; 85 -65 = 20 c. 25 -19 = ; 37 -28 =	1. 19-22, 24, 42-43. 46-50, 104, 106, 114, 116, 128, 130, 132, 137, 140, 142, 150, 156, 170, 172, 176, 183-184, 269-270, 273-274			
*2. Subtract problems to 99 with borrowing. a. 6 -2 = 4; 9 -5 = 4; 7 -2 = 5 b. 19 -9 = 10; 17 -10 = 7; 16 -9 = 7 c. 99 -9 = 90; 97 -48 = 49	2. 249-261, 276, 277			

SUBTRACTION

LEVELS A AND B SUBTRACTION ARE LOCATED AT THE BEGINNING OF THE ADDITION SECTION.

LEVEL C

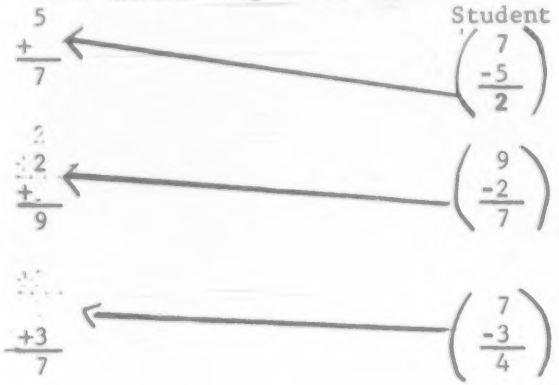
SUBTRACTION :continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK II	OTHERS	AV	Prepared Materials

Students should be able to:
(Review and maintain previous concepts and skills)

*3. Find the missing addend--two single digits.

Find the missing addend by subtraction.



3. 30, 32, 39-50, 56, 61-62, 78
BK I
91-102, 105, 120, 151-155, 158-174, 180-182, 195-198, 219-230

*4. Determine and name sums, differences, missing addends, and missing operational signs in problems written in both <u>horizontal and vertical</u> notation.

3 + 2 =	+ 5 = 9	Sums
6 - 2 =	19 - 8 =	Differences
8 + = 13	15 + = 16	Missing Addends
9 6 = 3	7 8 = 15	Operational Sign

Same problems written in vertical form.

4. Same as 1 and 2 plus pages 28, 59, 77, 198

LEVEL C

SUBTRACTION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES: HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
5. Use $>$, $<$, or = between subtract expression. a. Write $>$, $<$, or = between subtraction expressions to make the sentences true. $7 \bigcirc 8 - 3$, $9 - 3 \bigcirc 8$, $5 - 2 \bigcirc 3$. b. $17 - 9 \bigcirc 16 - 9$, $18 - 9 \bigcirc 19 - 9$, $17 - 9 \bigcirc 16 - 8$	5. 7-10, 27-28, 59, 77, 156, 198			
6. Write two related subtraction equations, if given an addition equation to show their inverse relationship. a. Write two subtraction sentences for each of the sentences below. Follow the example: $7 + 3 = 10$ $\quad$ $8 + 9 = 17$ $\underline{10 + 7 = 3}$ $\quad$ $\underline{17 - 9 = 8}$ $10 - 3 = 7$ $\quad$ $17 - 8 = 9$ $10 + 5 = 15$ $\underline{15 - 10 = 5}$ $15 - 5 = 10$ b. Same directions as above. $24 + 52 = 76$ $\quad$ $105 + 256 = 361$ $\underline{76 - 24 = 52}$ $\quad$ $\underline{361 - 195 = 256}$ $76 - 52 = 24$ $\quad$ $361 - 256 = 105$	6. 31, 43, 49-50, 104, 106, 114, 116, 128, 132, 137, 161.			

LEVEL C

SUBTRACTION continued

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES: HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*7. Recognize zero as the identity element of subtraction. $6 - \bigcirc = 6$, $18 - 0 = \bigcirc$, $\begin{array}{r} 35 \\ -0 \\ \hline \bigcirc \end{array}$, $\begin{array}{r} 52 \\ -\bigcirc \\ \hline 52 \end{array}$	7. 25, 39-40, 42, 310 BK I 101-102, 309-310			
8. Solve one step word problems. There were five dogs at the pet shop. Three dogs were sold. How many dogs were left in the shop?	8. 51, 90, 111-112, 131, 138, 197, 262, 275, 278			

LEVEL C

SUBTRACTION

SUGGESTED ACTIVITIES

See Suggested Activities, Addition, Level C.

LEVEL D

SUBTRACTION

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Master subtraction facts, numbers to 20.	1. 36-38, 56, 57, 59			
*2. Subtract no borrowing--3 or more digits. 862 - 641 = 221 6593 - 5432 = 1161 5,897,492 - 3,544,482 = 2,353,010	2. 96-97, 106-113, 158, 179, 319			
*3. Subtract borrowing 10's and/or 100's--3 digits. 462 - 218 = 244 753 - 462 = 291 900 - 759 = 141	3. 119, 121, 123, 158, 179, 248, 279, 281, 319			
*4. Utilize the inverse relationship to solve equations. Since 10 + 6 = 16, then 16 - 10 = 6 and 16 - __ = 10, Since 47 - 34 = 13, then 13 + 34 = __, and 47 - __ = 34	4. 32, 35, 51, 57, 268			

LEVEL D

SUBTRACTION continued

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*5. Show that subtraction <u>is not</u> commutative by use of an equation. Place = or ≠ in the circle: 10 - 2 ○ 2 - 10				
*6. Solve one step word problems. There are 68 children in the third grade. There are 52 children in the second grade. How many more children are there in the third grade than in the second grade?	6. 23, 46-47, 49, 54-55, 73, 79, 103-105, 107-109, 122, 234-235, 280, 296, 339			

LEVEL D

SUBTRACTION

SUGGESTED ACTIVITIES

Conbined with Addition--Level D

LEVEL E

SUBTRACTION

BEHAVIORAL OBJECTIVES	HM BK 4	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Subtract with borrowing, 3 or more place numbers. 3,201 -2,120 = 1,081 689,401 -399,898 = 289,603	1. 46-47, 50-51, 53-55, 64, 91, 126, 156, 176, 190, 218, 222-223, 286, 316, 325, 340			
*2. Solve multiple-step word problems. James hauled sixty lbs. of corn, 30 lbs. of oats, and 15 lbs. of barley into the barn. The animals ate 75 lbs. of grain that week. How many lbs. was left? 30 lbs. Henry jogged 2.8 miles one day. His goal was to jog 50 9/10 miles in one week. How many miles more does Henry have to run? 48.1 miles.	2. 43, 50, 62, 206			
3. Subtract 2 numbers whole numbers to thousand decimals to hundredths. 10.01 - 7.90 = 2.11 999.01 - 58.09 = 940.92		3. HBW BK 5 265-266		

LEVEL E

SUBTRACTION

SUGGESTED ACTIVITIES

A. Concrete objects such as discs, beads, paper tickets, in the place card holders, real money, or play money may be used to help children gain a better understanding of problems.

B. Let the children make up their own problems and give to the class.

C. Children will enjoy making up and solving "number tricks."

LEVEL F

SUBTRACTION

BEHAVIORAL OBJECTIVES	HM BK 5	OTHERS	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Subtract 2 decimal numbers with whole number parts and decimals to the ten thousandths. 52.1891 − 1.0231 = 51.1660 511.890176 − 82.867238 = 429.922938		1. HBW BK5 265-266		
*2. Use inverse relationship of addition and subtraction to solve problems with missing sums, differences, addends, operational signs in horizontal and vertical notation. 6,729 − 4,001 = 2,728 6,729 − ____ = 2,728 ____ − 4,001 = 2,728 6,729 − 4,001 = ____ Sum Addend Addend same as	2. 14, 36, 318 339			

LEVEL F

SUBTRACTION

SUGGESTED ACTIVITIES

A. Determining differences in weights of children in room.

B. Learn how much is saved by buying an article on sale.

C. Comparing the population of large cities.

D. Finding how much money is left after buying an article..

LEVEL G

SUBTRACTION

BEHAVIORAL OBJECTIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)			8	
*1. Subtract negative numbers from positive numbers. Use number line or thermometer.	1. 338-339			
a) -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 6 -2 Student must realize that --1 - 3 subtraction goes in direction, unless counter-manded by another sign.				
b) Use number line as in 1b and 2b under Addition or this level. 15 -4 Student must realize the subtraction - -3 - -12 goes in-direction, unless counter- 18 -16 manded by another sign.				
*2. Subtract two negative numbers.	2. 338-339			
a) Use number line as in 1a above. -2 -7 Student must realize that counter- - -4 - -3 manding occurs and counting must 2 -4 start with first number and proceed to right.				
b) Use number line as in 1b above. -12 -14 - -5 - -30 -7 16				

LEVEL C

SUBTRACTION

SUGGESTED ACTIVITIES

A. Demonstrate using the number line.

B. Compare distances run in local or international meets.

LEVEL C

MULTIPLICATION

BEHAVIORAL OBJECTIVES	REFERENCES AND RESOURCES			
	HM BK II	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
1. Relate multiplication facts as repeated addition. a) Write the addend that show what 3 x 3 means 3 x 3 = __ + __ + __	1. 283-286, 293, 295, 303, 310, 312	1. HBW BK II 127		
2. Multiply using 0 - 5 as factors 5 x 1 = ___ 2 x 3 = ___ 4 x 2 = ___	2. 283-290, 290-297, 301-305, 309-314	2. HBW BK2 128-129		
3. Fill in frames missing factors to 5 x 5 □ x 1 = 5 2 x □ = 6 4 x 2 = □	3. Same as 2.			
4. Complete 2 multiplication statements, illustrates commutative principle.	4. 288, 297, 304	4. HBW BK2 128-129, 132-133		
5. Solve one step word problems.	5. 299-300, 307-308	5. HBW BK2 130		

LEVEL D

MULTIPLICATION

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
1. Repeat addition to solve multiplication, limit 10 x 10. (Multiplication is simplified addition) 4 x 5 = ___ 5 x 10 = ___ 5 + 5 + 5 + 5 = ___ 10 + 10 + 10 + 10 + 10 = ___ so 4x5 = ___ so 5 x 10 = ___	1. 126-127, 132-133, 136, 141, 145			
*2. Multiplies using 0 and 1 as factors. 4 x 0 = ___ 1 x 4 = ___ 8 x 0 = ___ 1 x 8 = ___ 12 x 0 = ___ 1 x 12 = ___	2. 145, 224, 316			
3. Demonstrate oral/written multiplication facts through 10's.	3. 126-127, 131, 132-135, 136-138, 141-143, 194-197, 198-199, 200, 201, 220			
*4. Fill-in missing factors. To 10 x 10 ___ x 10 = 100, 4 x ___ = 36, 30 = 5 x ___	4. 128, 129, 157, 196, 271			

LEVEL D

MULTIPLICATION continued

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*5. Complete 2 multiplication statements, illustrating commutative principle. 6 x 8 = 8 x 6, 10 x 8 = ___ x ___, ___ x ___ = 9 x 2, 6 x ___ = 48, 48 = ___ x 8, 7 x ___ = 5 x ___	5. 313			
*6. Use terms: product, factor. Do the frames hold a place for a factor or product? Use "F" for factor and "P" for product. 9 x F = 81, P = 6 x 2, F x 4 = 20, 6 x 6 = P	6. 127-130, 133, 145, 157, 197, 224, 250			
*7. Solve 1-step word problems, multiplication to 10 x 10 10 pencils in each bundle, 5 bundles, how many pencils? 7 rows of chairs, 6 chairs in each row. How many chairs?	7. 139, 144, 149, 175-177, 204-207, 211, 213-214, 216, 234-235, 257-260, 262, 266, 277, 280, 296, 322-323, 334			

LEVEL D

MULTIPLICATION continued

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*8. Demonstrate that dividing is the inverse relationship of multiplying. We know that 15 ÷ 5 = 3 because 3 x 5 = 15. Since 9 x 8 = ☐, the 72 ÷ 9 = ☐	8. 130, 196, 269-270, 317			
*9. Fill in missing factors, products, operational signs in problems arranged horizontally or vertically. Fill in frames: ☐ x 6 - 48 ☐ = 5 x 8 9 9 x☐ x9 63 ☐	9. 126-128, 130, 133, 211, 213, 258			
10. Name products in two digit column multiplication with and without regrouping. 22 22 x 2 x 8 44 176	10. 210-213, 227, 259, 261, 264-265, 283			

LEVEL D

MULTIPLICATION

SUGGESTED ACTIVITIES

A. Introduce computation with the aid of manipulative materials, using the additive process.

B. Demonstrate the additive process to show that multiplication is a short whay of adding.

C. Use drill activities such as games, flash cards, etc.

D. Show the reversals do not affect the value of the product. Have children draw pictures to show four 5's and five 4's.

E. Show that multiplication is commutative; that is, the order of the factors may be changed without affecting the product.

LEVEL E

MULTIPLICATION

BEHAVIORAL OBJECTIVES	HM BK 4	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Use repeated addition to solve multiplication problems. 100 x 3 = 100 + 100 + 100 Students will write multiplication facts through 10.	1. 94-97			
*2. Write facts through 10 x 10	2. 104-109, 160			
*3. Rearrange multiplication factors as a check. (commutative principle) 43 x 10 = 10 x 43 8,493 x 398 = 398 x 8,493	3. 97, 161, 321			
*4. Show understanding of associative principle for multiplication. 6 x (4 x 1) = (6 x 4) x 1	4. 115-116, 161, 227-228, 321			
*5. Use distributive principle to simplify multiplication problems. 16 x 3 = (10 + 6) x 3 = (10 x 3) + (6 x 3) = 48 938 x 9 = (900 + 30 + 9) x 9 = (900 x 9) + (30 x 9) + (8 x 9) = 8,442	5. 98-99, 161-164, 201, 227-228, 323-324			

LEVEL E

MULTIPLICATION continued

BEHAVIORAL OBJECTIVES	HM BK 4	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*6. Multiply 1 digit factor times 2 digit factors. 48 x5	6. 115-119			
*7. Multiply 1 digit factor times a 3 or more digit factor. 5,894 x9	7. 120-121, 124, 162-163, 164, 166			
*8. Multiply 2 digits by 2 digits. 43 x58	8. 168-174, 176			
*9. Solve multiple-step word problems. A farmer was packing 12 eggs in each carton. He had packed 38 cartons. He had 504 eggs when he began. How many eggs does he have left to pack?	9. 82, 113, 123, 149, 154, 165, 167, 175			

LEVEL E

MULTIPLICATION

SUGGESTED ACTIVITIES

A. Use drill cards for competitive games.

B. Find total minutes needed if children have the same number of minutes to do an activity.

C. Figure cost of caps for baseball team.

D. Determining cost of entertaining group of friends at the show.

E. The "softball" game may be used to give practice in the multiplication facts.

F. Teach the children to check multiplication by interchanging the multiplier with the multiplicand.

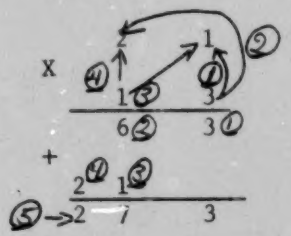
LEVEL F

MULTIPLICATION

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Check products by inverting factor order. Commutative law a x b = b x a ab = ba (5 x 2) = 10 5 x 2 = 2 x 5 (2 x 5) = 10 because 10 = 10 (24 x 20) = 480 24 x 20 = 20 x 24 (20 x 24) = 480 because 480 = 480	1. 14, 102, 132, 320			
2. Use associative principle to simplify multiplication by 1 and 2 digit numbers. Associative law (a x b) x c = a x (b x c) because (a x b) x c = a x (b x c) (ab) x c = a x (bc) abc = abc Substitute in numbers for a, b, c.	2. 14, 102, 108, 132, 320			
3. Use distributive principle to simplify multiplication of 1 and 2 digit numbers. Distributive law a (b + c) = (ab) + (ac) Substitute in numbers for a, b, c.	3. 14, 102, 105, 110, 120, 132, 169, 229, 320			

LEVEL F

MULTIPLICATION continued

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*4. Use multiplication (algorithm) for a 2 digit number times a 2 or more digit number.  5 steps (arrows in different colors)	4. 98-99, 108-111, 113, 320-321			
*5. Multiply a 3 digit number times a 3 or more digit number to 1,000,000. (Use Multiplication algorithm given above)		5. HBW 55-59		
*6. Find products of 11', 1's tables.				

LEVEL F

MULTIPLICATION continued

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*7. Multiply decimal number times a whole number. Hint: (Only in multiplication) Ignore decimal until final answer, then count all places to the right of decimal in both factors and place decimal that number of places from left (understood decimal) in answer. 45 x11 45 45 495 — Same — 4.5 x1.1 4 5 4 5 4.95 2 places	7. 335-336, 339			
*8. Multiply 10ths by 10ths. 23.2 x .4 Same concepts as #7. (Reword objective--clarify--10th and 10th.)	8. 335			
*9. Solve multiple step word problems. John has $3.50. He buys 12 candy bars at $.10 each for a birthday party. How much money will he have left? If Nancy buys 3 dozen oranges at $.34 a dozen, how much change will she receive if she gives the man $1.25?	9. 105, 111, 113, 119, 122, 142, 275, 324, 325			

LEVEL F

MULTIPLICATION

SUGGESTED ACTIVITIES

A. Using games and charts to develop skill and accuracy in multiplication.

B. Keeping scores made in speed and accuracy tests.

C. Use flash cards to insure skill and speed in the use of basic facts.

D. Finding the amount of fees collected from the class group for a party.

E. Checking grocery bills.

F. Finding the number of bottles of milk contained in cases delivered to school.

LEVEL G

MULTIPLICATION

BEHAVIORAL OBJECTIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Multiply whole number by mixed decimal. Checks point by estimation. a) 9 x 3.1 3.1 x 9 Estimation 9 x 3 = 27 27.9 (whole numbers) b) 16 x 7.4 7.4 Estimate by multiplying whole numbers. x16 16 444 x7 no. is in the 100 therefore decimal 74 112 would go after 100 place. 118.4	1. 306-310, 316		FS-191-196 Decimal and Percentage Series.	
2. Apply distributive principle for multiplying decimal numbers to 10th's. a) 1.1 2.3 1.1 x 2.3 Distributive 2.3 1.1 2.3 x 1.1 property says 3 3 2 3 they are equal. 22 23 2.53 2.53 b) 13.2 9.1 13.2 x 9.1 9.1 13.2 9.1 x 13.2 132 182 1188 273 Distributive Property 120.12 91 120.12	2. 15	2. HRW 237		

LEVEL G

MULTIPLICATION continued

BEHAVIORAL OBJECTIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
B. Multiply decimal number to 100th's by decimal 10th's. Check point by estimation. a) 1.01 × 2.1 = 1 01 / 20 2 / 2.121 — Estimation: 1 × 2 = 2 b) 32.64 × 3.5 = 16320 / 9792 / 114.250 — Estimation: 30 × 4 = 120	3. 308-310	3. HRW 234-235, 241, 243		
*4. Multiply 2 decimal numbers with decimal parts to the hundredths. a) 1.23 × 2.42 b) 240.69 × 29.85		4. HRW 238-239, 241, 243		
*5. Multiply 2 decimal number factors with decimal parts to the thousandths. a) 1.203 × 2.421 b) 240.694 × 29.856 Answers: a) 2.912463 b) 7186.160064		5. HRW 238-239, 241, 243		

LEVEL G

MULTIPLICATION

SUGGESTED ACTIVITIES

A. To illustrate the "why" behind decimal point placement refer to common fraction equivalents.

B. Show multiplication by using the additive process.

C. Problems involving money.

D. Determine batting averages of each player on school's baseball team.

LEVEL D

DIVISION

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
1. Determine members of a subset from elements of a set. Divide these sets into subsets to illustrate division equations and fill in the frames. $6 \div 3 = \square$ 70 $\div \square = 10$ o o o (Draw sets) o o o	1. 129, 134, 138, 143, 166, 196, 197, 269, 326-328, 330			
2. Recognize empty set is a subset of every set.	2. 4	2. HBW BK 3 1, 2		
*3. Use multiplication facts to solve divison. To 10 x 10, including 0 and 1. Since $2 \times 4 = 8$, $8 \div 2 = \square$. Since $5 \times 9 = 45$, $45 \div 9 = \square$	3. 130, 145, 196, 224, 219, 269-270, 316-317			
*4. Use terms: dividend, divisor, quotient or factor, factor, product. Have students label division problems.	4. 328, 338	4. HBW BK 4 74		
*5. Divide problems through 100 ÷ 10. Worksheet	5. 129-130, 134, 138, 143, 196-197, 199, 201			

LEVEL D

DIVISION continued

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*6. Divide by 1 and 0. $1\overline{)5}$ 98 ÷ 1 = 8 ÷ 0 =	6. 145	6. HRW BK3 25 HBW BK3 234, 235, 264		
*7. Fill-in frames to find missing quotient. 14 ÷ 2 = 9 ÷ 9 = 0 ÷ 6 =	7. 129, 157, 196, 271			
8. Solve 1-step problems through 10 x 10 We have 30 cents, apples are 6¢ each, how many apples can we buy? 6 rows of chairs, 54 chairs in the room, how many chairs in each row?	8. 139, 203, 216, 234- 235, 227, 305, 324, 334-335, 339			
9. Compose and use number sentences to show division as the inverse of multiplication. 12 ÷ ____ = 4 and 3 x ____ = ____; ____ ÷ ____ = ____ and ____ x ____ = ____		9. HBW BK3 193-196, 200-201, 204, 205, 223, 224, 230, 254, 255, 257, 290, 291, 311, 312		

LEVEL D

DIVISION

SUGGESTED ACTIVITES

A. Use number line to demonstrate division, counting the number of intervals to find the quotient.

B. Show the three concepts of division:
   1. Subtraction
   2. Partition
   3. Multiplication

LEVEL E

DIVISION

BEHAVIORAL OBJECTIVES	HM BK 4	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Find missing factor or quotients for division problems through 100 ÷ 10.	1. 106, 108-109, 160, 179-185, 230-237			
2. Use distributive principle with simple numbers to simplify division problems. 4 ÷ 36 = (20 + 4) + (16 + 4)	2. 324	2. HBW BK 4 86		
*3. Divide with remainders, 1 digit factor and product. $5\overline{)7}$	3. 160	3. HRW BK 4 101-102		
*4. Divide with remainders, 1 digit factor, 2 or more digit products. $4\overline{)29}$	4. 179-185, 180-182, 230-232, 236, 251			
*5. Check division problems by inverse operation of multiplication for 2 or more digit products. $4\overline{)8}^{\,2}$ $\quad$ $\begin{array}{r}4\\ \times 2\\ \hline 8\end{array}$ $\quad$ $2\overline{)528}^{\,264}$ $\quad$ $\begin{array}{r}264\\ \times 2\\ \hline 528\end{array}$	5. 233, 328			

LEVEL E

DIVISION continued

BEHAVIORAL OBJECTIVES	HM BK 4	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*6. Solves multiple step word problems. Rodger paid 48¢ for 4 coloring pencils. What was the price of each pencil? Last Halloween the four Jones children collected 372 pieces of candy. If they shared equally, how many pieces did each child get? How many dozen would this be for each one?	6. 113, 186, 253, 329			

LEVEL E

DIVISION

SUGGESTED ACTIVITIES

A. Sharing cost of gift for a classmate.

B. Average length of a number of broad jumps.

C. Figure average amount spent by family per day, per person of food.

D. Check by multiplication.

E. The number line provides a graphic way to show how dividing "undoes" multiplying.

LEVEL F

DIVISION

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
1. Use repeated subtraction to solve division problems. Draw or have objects such as circles. Sets of objects ○○○ Whole Circles ⊖⊖⊖ Half Circles ⊕⊕⊕ Quarter Circles Given: 3 students and 3 quarter circles, a student is asked to give and same amount of quarter circles to the 3 students by taking one away at a time.	1. 99			
*2. Divide a 2 or more digit dividend by a 2 or 3 digit divisor.	2. 132, 126-129, 324			
3. Round numbers (divisor and/or dividend) to estimate quotients. Dividends to 2,000. $6\overline{)1,782}$ Round dividend to 1,800. 782 is over 50 so 7 (which is in the 100's place) is increased by 1. Therefore the problem becomes: $6\overline{)1,800}$ -- ie. $6\overline{)18}$ $30\overline{)1,523}$ Worked in a similar manner as the first problem.	3. 125, 128-129			

LEVEL F

DIVISION continued

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*4. Use division algorithm with 2 or 3 place factors, write R, remainder. 77 R 3 32 2,467 2 24 227 224 3 Remainder 227 R 86 387 87,935 77 4 10 53 7 74 2 795 2 709 86 Remainder	4. 124-125, 126-127, 132			
*5. Use fractional notation as a way of solving division problems written as fractions. (Comparing fractions and division as same.) Fractional notation $\frac{4}{2} = 2\overline{)4} = 4 \div 2$ Same meaning 4 divided by 2 $\frac{210}{30} = 30\overline{)210} = 210 \div 30$ Same meaning 210 divided by 30 Same answers	5. 217, 326			

LEVEL F

DIVISION continued

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*6. Write remainder as a fraction and reduce when practical Same example as #4 Answer $77\frac{3}{32}$ $32\overline{)2467}$ R $\frac{3}{32}$ 224 227 224 3 Remainder is 3 parts of divisor 32 therefore is written as $\frac{3}{32}$	6. 217	6. HRW BK5 188, 191, 207, 351		
*7. Divide a decimal by a whole number. $2\overline{).28}$ $2\overline{)4.28}$ Step 1. Bring decimal place from dividend up into quotient. Step 2. Divide as in regular division problem, making sure all places after the decimal are filled with a number. $7\overline{)21.35}$ $7\overline{).35}$ Same rule as above (Use zero as a place holder as all places after the decimal must be filled.)		7. HBW BK5 146-147, 220		

LEVEL F

DIVISION continued

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*8. Multiple step word problems. If John buys a package of paper with 70 sheets in it for 35¢, how much did each sheet cost? 2¢ a sheet 35 ⟌ 70 If John uses 5 sheets a day, how many days will his paper last? 14 days 5 ⟌ 70 One week Jim had the following test scores: 91, 89, 74, 86, and 90. The next week his test schores were 89, 90, 94, 93, and 94. How many points better was his average score for the second week than for the first week?	8. 119, 121-122, 142, 272, 324-325			

LEVEL F

DIVISION

SUGGESTED ACTIVITIES

A. Finding number of buses needed for a field trip.

B. Finding individuals cost for bus fare for field trips, and party refreshments.

LEVEL G

DIVISION

BEHAVIORAL OBJECTIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Write a remainder as a fractional part of the divisor, reduce to the lowest terms. a) $20\overline{)406}$ 6/20 = 20 6 20 = 20 3/10 (3/10) b) $640\overline{)1964}$ 3 44/640 = 3 44 640 = 3 11/160 (11/160)	1. 54-63 66, 110-117, 127, 331			
2. Use distributive principle to simplify division problems for 3 or more digit dividends, 3 digit divisors. a) 64/12 = 60/12 + 4/12 = 5 1/3 (1/3) b) 68/40 = 60/40 + 8/40 = 1 7/10 (3/2 1/5)	2. 55, 66, 127			
*3. Divide numbers with decimals to one hundredth's place a) $1.36\overline{)6.80}$ .05 b) $22.68\overline{)136.08}$ .06	3. 311-316	3. HRW BK6 262-264		

LEVEL G

DIVISION continued

BEHAVIORAL OBJECTIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*4. Divide numbers with decimals to thousandths place Round decimals, estimate quotients. a) $3.022\overline{)15.1520}$ $.0050$ Round = $3.0\overline{)15.2}$ $.5$ b) $42.645\overline{)341.368}$ Round = $42.6\overline{)341.4}$ $.8$	4. 312, 314, 316	4. HRW BK6 265, 271, 274-275		

LEVEL G

DIVISION

SUGGESTED ACTIVITIES

A. Determine the average daily cost of a vaction.

B. Finding the average number of words read per minute.

LEVEL C

COMBINATION OF PROCESSES

BEHAVIORAL OBJECTIVES	HM BK 2	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills) *1. Add, subtract mixed sets of problems. Borrowing and carrying can be involved. Use vertical or horizontal form. 97 26 50 -32 +283 -30 7 - (2 + 3) = □ 16 - (8 + 3) = □ 87 - (4 + 23) = □ *2. Do sums and differences in money, measurement and time. Money: 15¢ 14¢ - 2¢ = 9 cents 7¢ 6¢ + 2¢ = +8 cents $ .08 +.10 Measurement: a and b 17 inches 6 ft. -8 inches +7 ft. 12 ft. - 7 ft. = □ 5 yards + 9 yards = □ Time: 3 minutes 5 minutes +2 minutes +6 minutes 13 hours - 7 hours = n 8 hours - 5 hours = n	1. 30-32, 43, 49-50, 114-117, 132, 142, 156, 183-184, 200, 261, 279 2. 186-196, 277, 278, 300, money BK3 246-248, 279	1. HBW 61-62, 78, 130, 142, 151, 183-184, 200, 261, 279		

LEVEL C

COMBINATION OF PROCESSES continued

BEHAVIORAL OBJECTIVES	HM BK 2	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*3. Solve one-step story problems adding and subtracting money, time and measurement values. Subtraction of money a)Two cupcakes cost 14¢. What will the change be from a quarter? b)A boy had 14¢. He spent all of it but 2¢. How much did he spend? Addition of Money a)One cookie costs 9¢ and another 8¢. If you bought one of each, how much would you spend? b)A girl earned 73 cents the first day and 36 cents the second day. How much did she earn? Subtraction of Time a) A boy walks to school in 11 minutes. His friend takes 8 minutes. How much longer does it take the first boy? b)One girl read 3 books in 13 hours. Another girl read the same book in 7 hours. How much longer did the one girl take? Addition of time: a)A girl worked 3 hours one day and 5 hours the next day. How many hours did she work all together? b) It takes 24 minutes to mix a cake and 35 minutes to bake it. How long did it take? Subtraction of Measurement: a)A board is 12 ft. long, 2 ft. were used. How many feet were not used? b)A candy cane 17 inches long, 8 inches were eaten. How many inches remain to be eaten? Addition of Measurement: a)1 table is 6 ft. long, another table is 3 ft. long. Together the 2 tables are how long? b)One wall is 5 yards long. The next wall is 9 yards long. What is the total length of the 2 walls?	3. 275 Meas. 278 Money	3. HRW BK2 59, 81, 103, 104, 107, 135, 139, 143, 148, 157, 159, 163 - Money 62, 63 Time 88, 141, 15 72, 73 - Measurement 176 HBW BK2 60, 61, 64, 65, 98, 112		

LEVEL C

COMBINATION OF PROCESSES continued

BEHAVIORAL OBJECTIVES	HM BK 2	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills) *4. Fill in >, <, =, ≠ in addition, subtraction problems using money, time and measurement values. Write the correct symbol (>, <, =, ≠) in the circles below to make the sentences true. Subtraction of money: a) 12 cents - 7 cents ◯ 13 cents (<) or (≠) 7¢ ◯ 15¢ - 7¢ (<) or (≠) b) 12¢ - 8¢ ◯ 9¢ - 6¢ (>) or (≠) 11 cents - 5 cents ◯ 12 cents - 6 cents (=) Addition of money: a) 7¢ + 4¢ ◯ 8¢ (>) or (≠) 5 cents + 6 cents ◯ 9 cents (≠) or (>) b) 7¢ + 4¢ ◯ 5¢ + 8¢ (<) or (≠) 2 cents + 9 cents ◯ 6 cents + 5 cents (=) Subtraction of Time: a) 7 minutes ◯ 13 minutes - 9 minutes (>) or (≠) 16 hrs. - 7 hrs. ◯ 7 hrs. (>) b) 12 hours - 8 hours ◯ 9 hours - 6 hours (>) or (≠) 11 min. - 5 min. ◯ 12 min. - 6 min. (=) Addition of Time: a) 7 minutes + 4 minutes ◯ 8 minutes (>) or (≠) 5 hours ◯ 9 hours + 6 hours (>) or (≠) b) 7 hours + 4 hours ◯ 5 hours + 8 hours (<) or (≠) 2 min. + 9 min. ◯ 6 min. + 5 min. (=)		4. HRW BK2 72, 73, 88, 102		

LEVEL C

CONBINATION OF PROCESSES continued

BEHAVIORAL OBJECTIVES	HM BK 2	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*4. Continued Subtraction of measurement: a) 12 inches - 7 inches ◯ 9 inches (<) or (≠) 7 feet ◯ 15 feet - 6 feet (<) or (≠) b) 12 in. - 8 in. ◯ 9 in. - 6 in. (>) or (≠) 11 ft. - 5 ft. ◯ 12 ft. - 6 ft. (=) Addition of measurement: a) 7 inches + 4 inches ◯ 8 inches (>) or (≠) 11 ft. ◯ 9 feet + 6 feet (<) or (≠) b) 7 in. + 4 in. ◯ 5 in. + 8 in. (<) or (≠) 2 yards + 9 yards ◯ 6 yards + 5 yards (=)				
*5. Insert + or - to complete an equation. Complete the equation with + or -: a) 5 ◯ 3 = 8 13 ◯ 5 - 18 7 5 = 2 18 ◯ 7 = 11 b) 54 ◯ 2 = 56 95 ◯ 5 = 90	5. 28, 59, 77, 197, 198	5. HRW BK2 8, 10 HBW BK2 10, 25, 51		
*6. Fill in missing addend in 2-step equation combining addition and subtraction. a) 6 - (2 +) = 0 4 + (2 -) = 5 b) 17 - (+ 5) = 4 3 + (- 5) = 5	6. 17, 20, 34, 36-38, 149			

LEVEL D

COMBINATION OF PROCESSES

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Determine and name products, quotients, sums, differences missing addends, missing factors, and missing operational signs in problems written vertically or horizontally. Fill in the boxes with the correct number. Fill in the circles with the correct operational sign. (+, -, x, or ÷) 5 x 4 = 9 (Addition or multiplication) 7 + = 14 9 56 24 = 32 7 x = 63 95 2 15 2 (or x) 110 4	1. 48, 57, 127, 128, 129, 157, 196, 211, 213, 227, 258, 261, 264, 271, 283, 322-323, 333			
*2. Add, subtract vertically or horizontally. (Money, time, and measurement) to 2,000 5¢ 265 feet 12 minutes - 8 minues = 12¢ -126 feet 21¢	2. 175, 247-248	2. HBW BK3 99, 103, 144 147, 154, 155, 168, 171, 172 HBW BK3 258-261, 332		

LEVEL D

COMBINATION OF PROCESSES (continued)

BEHAVIORAL OBJECTIVES	HM BK 3	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*3. Solve 1 or 2-step word problems. Johnny has one boy rabbit. Jill has one girl rabbit. How many rabbits will they have if they put them together? (Hint: Problem is in multiplication, not addition.) If Jack has 4 boxes, each with nine oranges in it, how many oranges does he have in all? (4 x 9 = 36) If Jack has 4 boxes, each with nine oranges in it, and Bill has five baskets of six pears each, which boy has more pieces of fruit? (Jack) How many more? (6)	3. 263, 266, 278, 296, 305, 325	3. HBW BK3 156		

LEVEL E

COMBINATION OF PROCESSES

BEHAVIORAL OBJECTIVES	HM BK 4	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Solve equations with "N" as a variable. 16 + 2 = N N = 8 (197 + 82) + 3 = N 279 + 3 = N N = 93	1. 10	1. HBW BK4 106, 152, 174, 176, 187		
*2. Supply missing sign <, >, = or ≠ for combinations of +, -, x, or ÷ 4 3 = 7 5 2 = 3 5 + 5 = 11 6 + 3 9	2. 10, 32-35	2. HBW BK4 15		
*3. Find averages for numbers. Average the following: 2, 6, 9 = 28, 35, 90 =	3. 280-282			
4. Select principle describing equation. 3 + 2 = 2 + 3 -- Commutative Law 640 x 8 = (600 x 8) = (40 x 8) = 4800 + 320 = 5120				

LEVEL F

COMBINATION OF PROCESSES

BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*1. Add and subtract to 1,000,000. 528,426 + 68,489 = 606,915 943,622 - 7,538 = 936,084 372,492 + 111,093 - 66,242 (Left to right progression)		1. HBW BK5 324, 325, 329		
*2. Do mixed exercises in multiplication and division. $\frac{2}{4} \div \frac{1}{2} \times 3$ $6\overline{)48}$ $9\overline{)53}$ $\frac{2}{4} \times \frac{1}{2} \times \frac{3}{1} = \frac{6}{4}$ $\frac{53}{9} \times \frac{1}{6} \div 2$	2. 98-99, 103			
*3. Supply missing <, >, =, or ≠ in addition, subtraction, multiplication, and division problems. Use <, >, =, or ≠ in the following: 458 + 110 ___ 958 458 - 10 ___ 123 458 x 1 ___ 458 458 - 2 ___ 226	3. 11, 33, 115 199, 306			

LEVEL F

COMBINATION OF PROCESSES continued

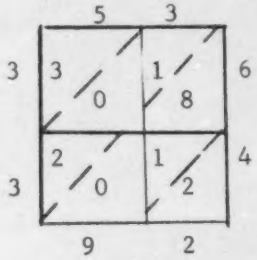
BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*4. Use a combination of processes to find averages. The daily temperatures for the week were as follows: Monday 72° Tuesday 68° Wednesday 70° Thursday 75° Friday 75° Saturday 73° Sunday 74° What was the average temperature for the week?	4. 156-159, 163, 284	4. HBW BK5 150-152, HRW BK5 55, 207		
*5. Multiple step word problems using all processes: fractions, money, time, and measurement units. Bill caught 4 fish, each weighing 2 pounds. Pete caught 3 fish, each weighing 3 pounds. How many more pounds did all of Pete's fish weigh than did Bill's? a. (4 + 2) - (3 + 3) = _____ b. (4 x 2) - (3 x 3) = _____ c. (3 x 3) - (4 x 2) = _____ d. (3 x 3) + (4 x 2) = _____ In an orchard there were 12 rows of apple trees with 9 trees in each row. If each tree produced an average of 14 bushels of apples, how many bushels can be expected from all the apple trees?	5. 204, 231, 245, 307, 57, 107, 112, 113, 142, 143, 186, 58, 78, 274, 285			

LEVEL F

COMBINATION OF PROCESSES continued

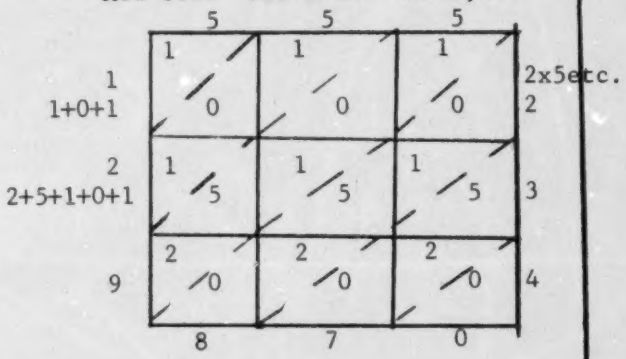
BEHAVIORAL OBJECTIVES	HM BK 5	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills) 6. Use the lattice method of multiplication to name products.	6. 133 BK6 -- 102- 103			

53 x 64 3392



2 + 0 + 1
0 + 1 + 8
6 x 5 = 30 etc.
Add -- rows

Add rows 555 x 234 129,870



LEVEL F

COMBINATION OF PROCESSES

SUGGESTED ACTIVITIES

A. Finding the average speed of trains, planes, and buses.

B. Finding averages: grades in school subjects, baseball, rainfall, temperature.

C. Comparing scores of teams, temperatures, in different cities; rainfall, snow fall.

D. Determining the batting averages of each player on school's team.

E. Comparing average speed per hour of cross country record flights with earlier records.

LEVEL G

COMBINATION OF PROCESSES

BEHAVIORAL OBJECTIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills) 1. Adds and subtracts positive and negative numbers. a) 12 + -9 = 3 ; -40 + -34 = -74 ; b) 24 + 62 + -45 = 41 ; 164 - -25 = 189 *2. Add, subtract, multiply, and divide decimals. a) 10.61 +9.04 = 19.65 ; 10.61 -9.04 = 1.57 ; 10.61 x9.04 = 42 44 / 75 49 0 / 75.91 44 ; 9.04 ⟌ 10.61 00 = 9 04 / 1 57 0 / 90 4 / 66 60 / 63 28	1. 338-339		FS 191-196 Decimal and Percentage Series FS 221-222 Changing Common Fraction to %. Changing % to Common Fractions FS 587 Addition and Subtraction of Fractions 16mm F-16 What are Fractions 16mm F-14 % in Everyday Life 16mm F-15 What are decimals?	

LEVEL G

COMBINATION OF PROCESSES continued

BEHAVIORAL OBJECTIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills) *3. Work all processes with fractions. 1/4 + 1/3 = 3/12 + 4/12 = 7/12 1/4 - 1/3 = 3/12 - 4/12 = 1/12 1/4 x 1/3 = 1/12 1/4 ÷ 1/3 = 1/4 x 3/1 = 3/4	3. Addition 208-209 214-221 233, 247 Division 200, 202, 206, 252- 253, 255- 259, 261 Multiplication 203-206, 234-236, 238-247, 252-254, 260-261, 267, 306 Subtraction 208-209, 214-219, 222-224, 247			

LEVEL G

COMBINATION OF PROCESSES (continued)

BEHAVIORAL OBJECTIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*4. Solve multiple-step word problems. a) If Jack has four times the number of kites Bill has, and Bill has five kites, how many kites does Jack have? 5 x 4 = 20 If Jack has four times as many kites as Bill, and Bill has two more than Jim, how many does Jack have if Jim has 7? 7 + 2 = 9 9 x 4 = 36 b) Bill has thirty-six students in his class. Jane has two-thirds that number of students in her class. How many students are in Jane's class? 36 x 2/3 = 7 2/3 = 24 Robert makes $1.25 per hour. Tom makes 12¢ more per hour than Robert, and Ray makes half what Tom does. How much per hour does Ray make? $1.25 + $.12 = $1.37 $1.37 ÷ 2 = $.68½	4. 40-41, 48, 50, 59, 63, 77, 85, 100, 106, 110, 113-115, 117-118, 121, 136-137, 178, 305, 312, 319, 323-324, 326.			
*5. Multiplys to find percent of whole numbers. a) 20% of 40 40 2 8.0 or 20/100 x 40/1 = 8 1 / 5 8 1 b) 29% of 64 64 x29 576 128 18.56 or 29/100 x 64/1 = 464/25 25 16	5. 318-325			

LEVEL G

COMBINATION OF PROCESSES (continued)

BEHAVIORAL OBJECTIVES	HM BK 6	OTHER	AV	Prepared Materials
Students should be able to: (Review and maintain previous concepts and skills)				
*6. Find average of a group of numbers. Add 15, 17, 17, 18, 21, 21, 26, 28 - 180 9-20 average	6. 119-120, 146-149, 312			
*7. Demonstrate the ability to solve problems dealing with rates and ratios. a) The rate: 40¢ per hour The rule: 40 x N = f(M) Number of hours:M | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 Number of cents:f(M) | 40 | 80 | a | c | 3 | n | r | s Answer: a=120 e=200 r=280 c=160 n=280 s=320 b) Name the missing number to make the ratios equal. 1. ½=a/8 a=4 2. b/4 = 6/8 b=3	7. A. 50-51 106-107, 127, 142, B. 286-289, 295, 340			
*8. Solve word probems dealing with rates.	8. 50-51, 63, 106, 110, 113-115, 117, 136, 178, 247, 260, 262			

LEVEL G

COMBINATION OF PROCESSES

SUGGESTED ACTIVITIES

A. Find the luxury tax and state tax on items purchased.

B. Find percent of increase and decrease in food items.

C. Find the percent number of pupils who joined the Red Cross.

D. Make a poster or bulletin board display showing uses of percents.